



US006546002B1

(12) **United States Patent**  
**Kim**(10) **Patent No.: US 6,546,002 B1**(45) **Date of Patent: Apr. 8, 2003**(54) **SYSTEM AND METHOD FOR  
IMPLEMENTING AN INTELLIGENT AND  
MOBILE MENU-INTERFACE AGENT**(76) **Inventor: Joseph J. Kim, 1375 Montecito Ave.,#  
17, Mountain View, CA (US) 94043**(\*) **Notice:** Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.(21) **Appl. No.: 09/346,788**(22) **Filed: Jul. 7, 1999**(51) **Int. Cl.<sup>7</sup> ..... H04L 12/28**(52) **U.S. Cl. .... 370/351**(58) **Field of Search** ..... 370/350-354,  
370/401, 402, 338; 345/327, 721, 700,  
719; 709/232, 207, 315-317; 707/513,  
103, 104; 725/110-113; 455/552-556, 426,  
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*Primary Examiner*—Kwang B. Yao*Assistant Examiner*—Prenell Jones(74) *Attorney, Agent, or Firm*—Pillsbury Winthrop LLP(57) **ABSTRACT**

The present invention provides a system and method for using a mobile interface agent to dynamically access programs, applications, bookmarked URLs, IP addresses, telephone numbers, television channels, radio stations, user profiles, and the like that are specific to a user via any computer type device. The mobile interface agent can be accessible using any computer from any geographical location so long as the computer can be connected to a network. The mobile interface agent is basically an agent that allows the user to access documents, files, programs, applications, URL bookmarks, IP addresses, telephone numbers, television channels, radio stations, and other menu items from any computer. Moreover, the present invention relates to a per user based licensing model that allows the user to remotely access and use computer programs.

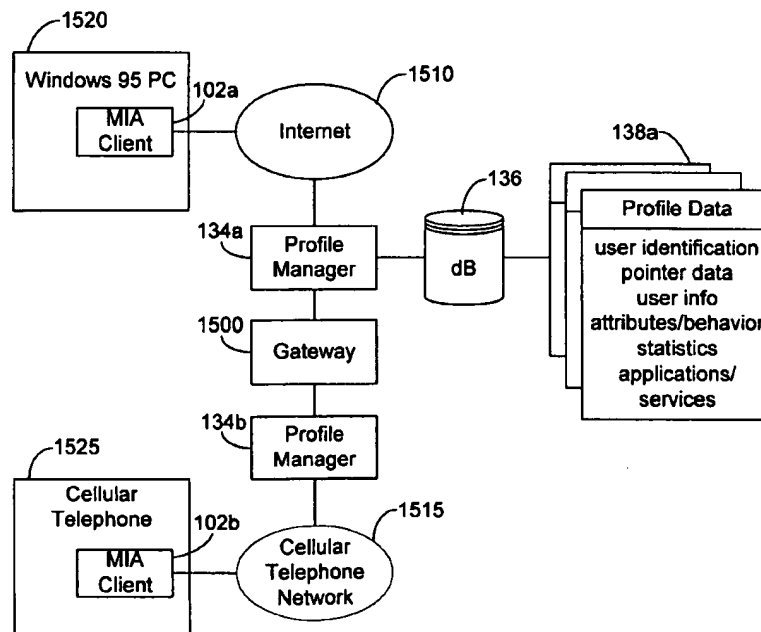
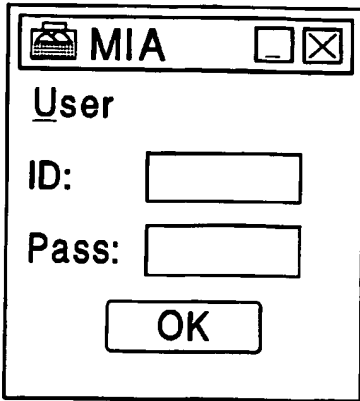
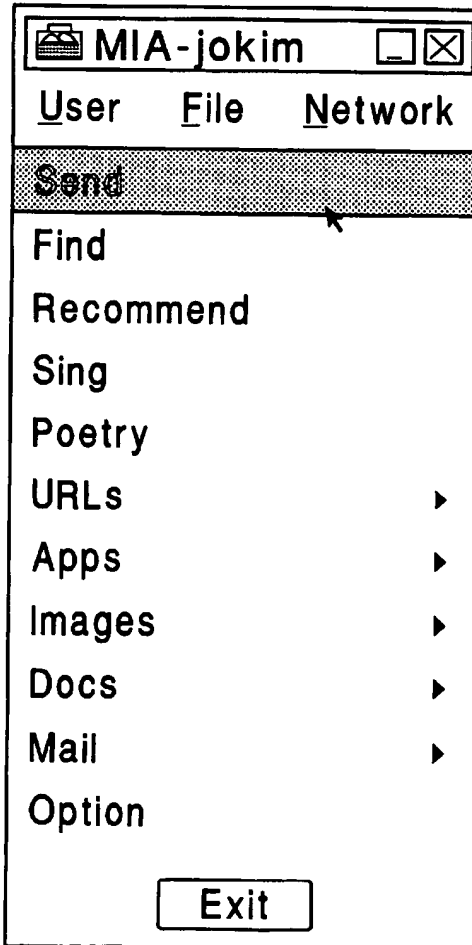
**49 Claims, 15 Drawing Sheets**

FIG. 1A



A small rectangular window titled "MIA" with a folder icon on the left and minimize and close buttons on the right. Inside the window, the word "User" is underlined. Below it are two input fields: "ID:" followed by a rectangular box, and "Pass:" followed by a rectangular box. At the bottom center is an "OK" button.

FIG. 1B



A rectangular window titled "MIA-jokim" with a folder icon on the left and minimize and close buttons on the right. Below the title bar is a menu bar with three items: "User", "File", and "Network", each with its first letter underlined. A dropdown menu is open under the "User" menu item. The dropdown menu has a shaded header bar with the word "Send". Below the header are the following menu items: "Find", "Recommend", "Sing", "Poetry", "URLs", "Apps", "Images", "Docs", "Mail", and "Option". Each of the last five items has a right-pointing arrow next to it. At the bottom of the window is an "Exit" button.

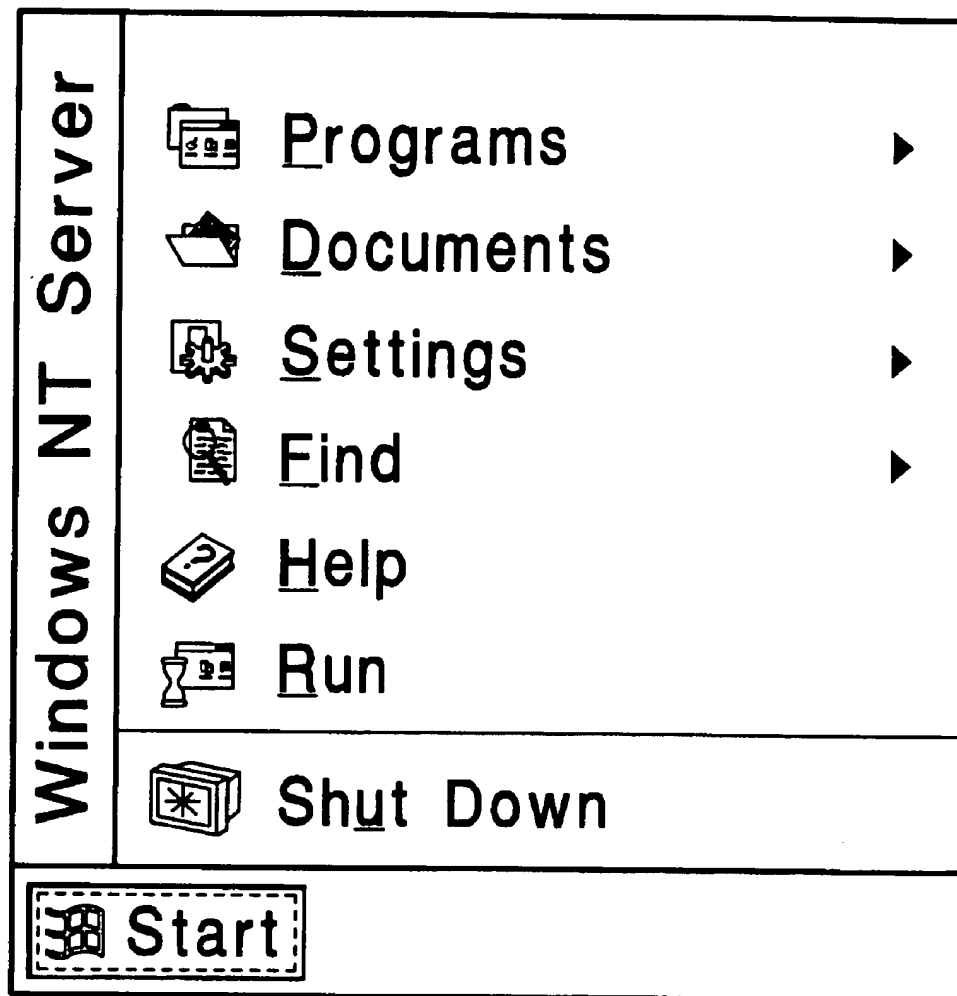


FIG. 2

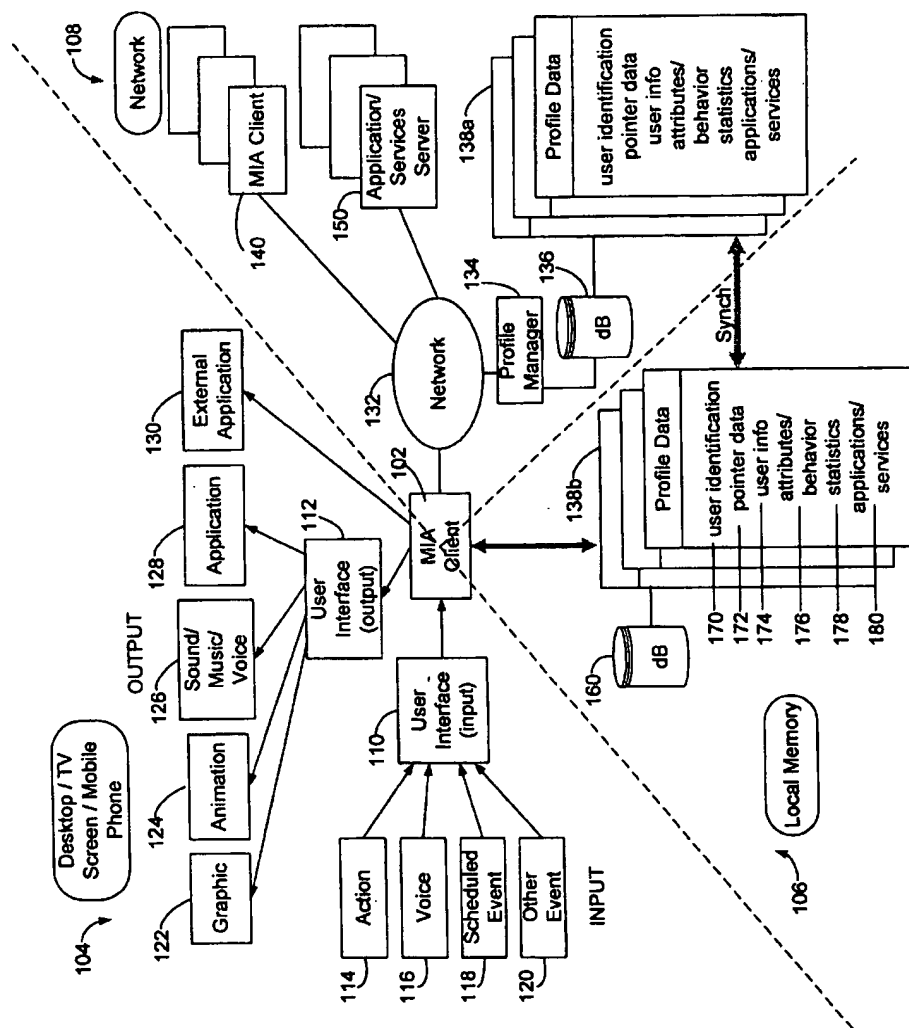


FIG. 3

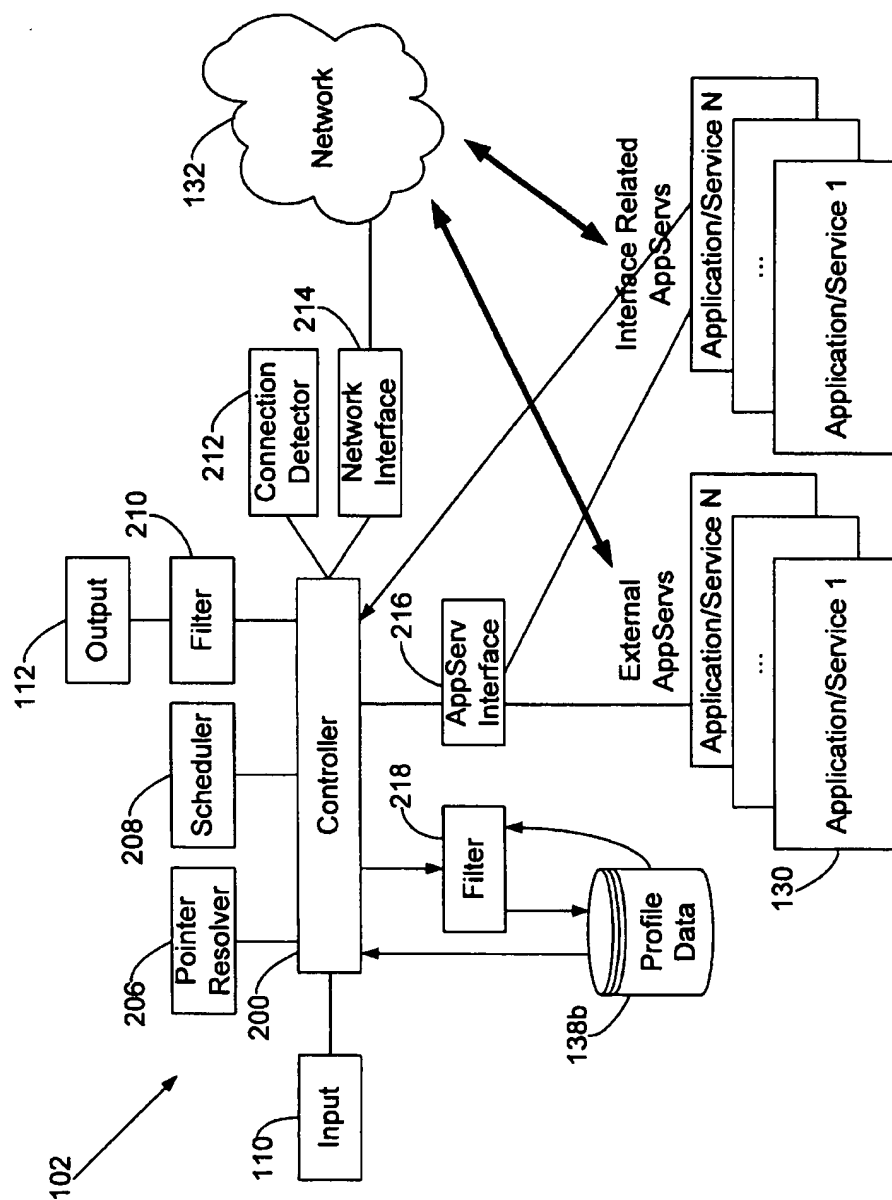


FIG. 4

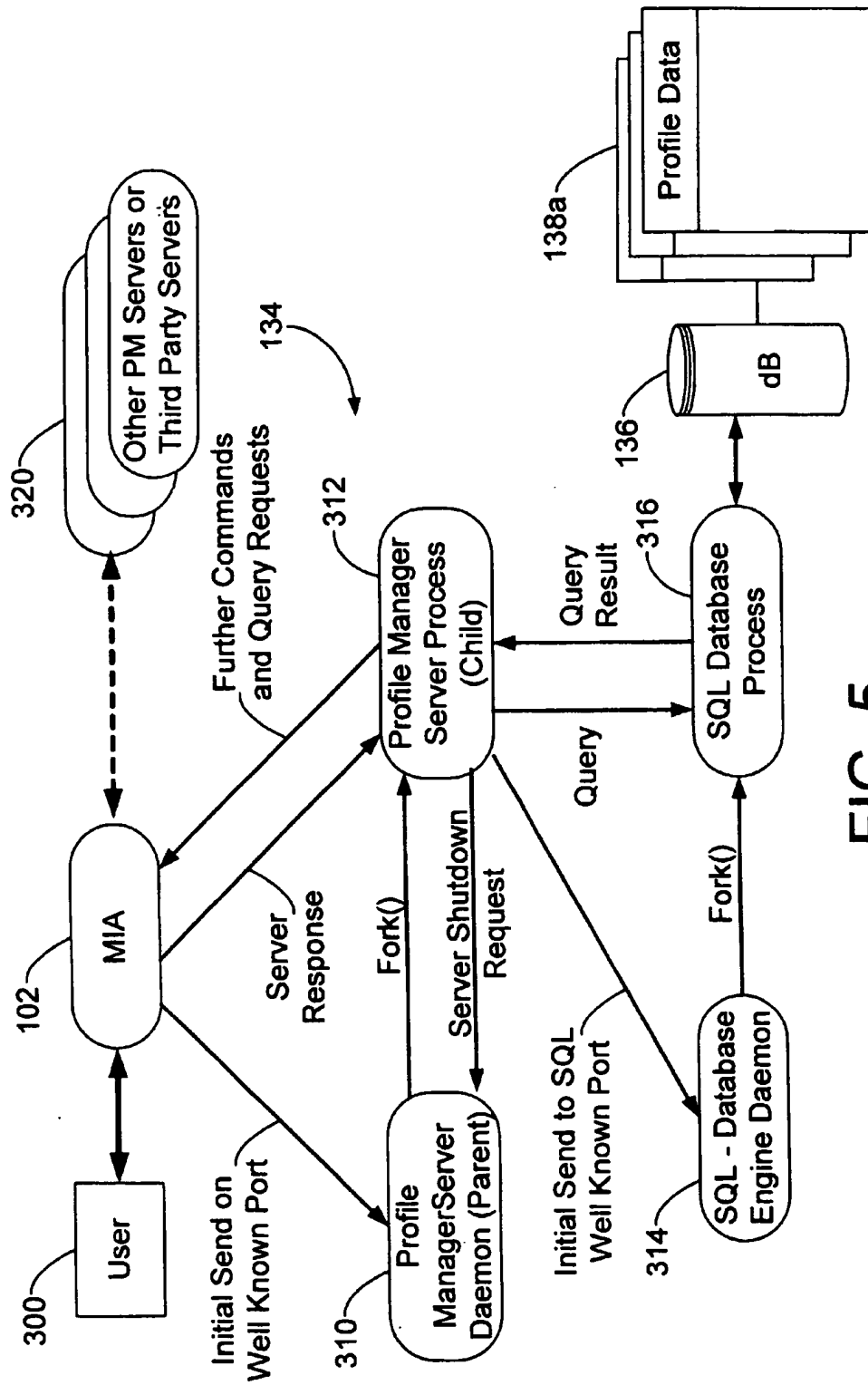


FIG. 5

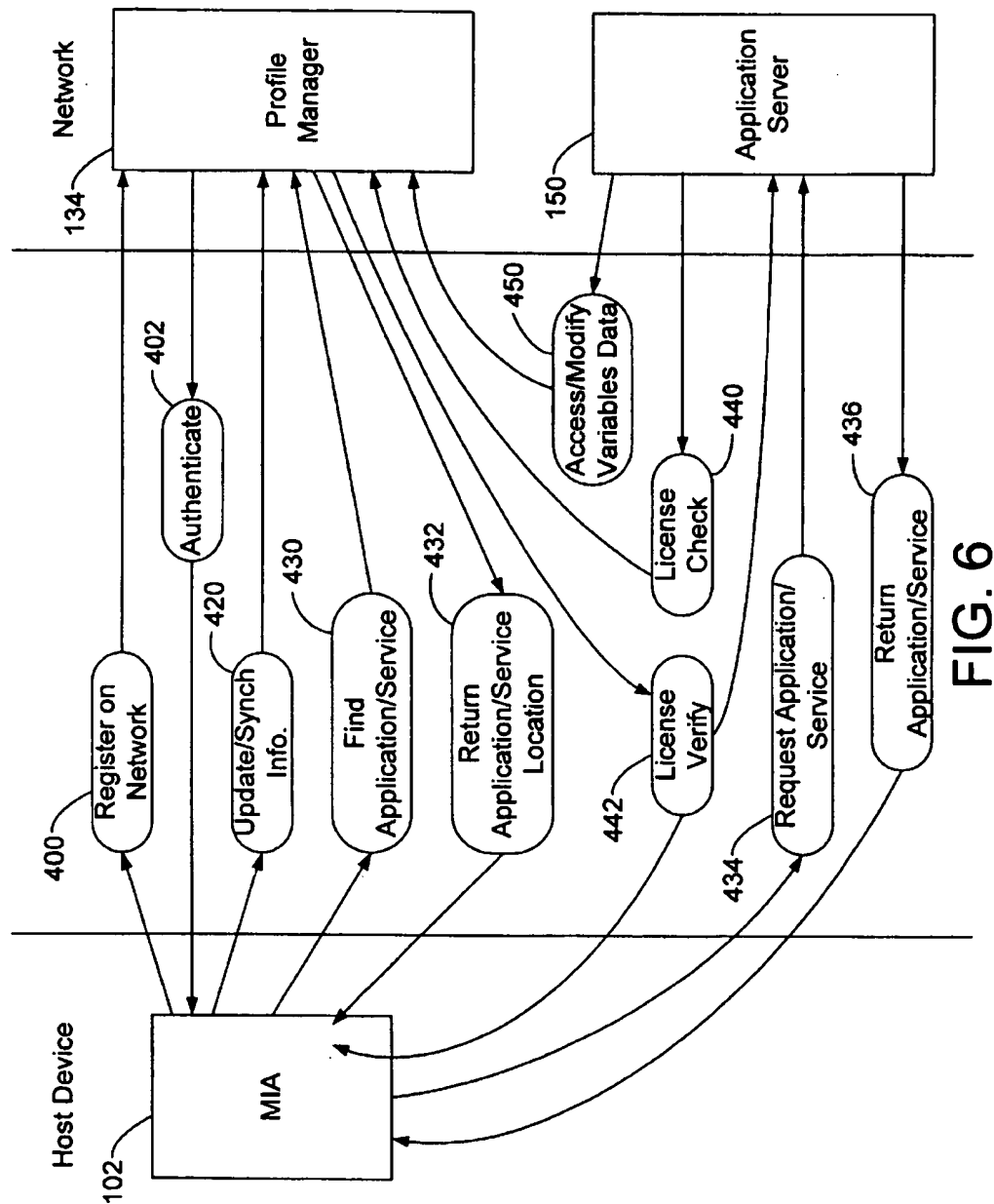


FIG. 6

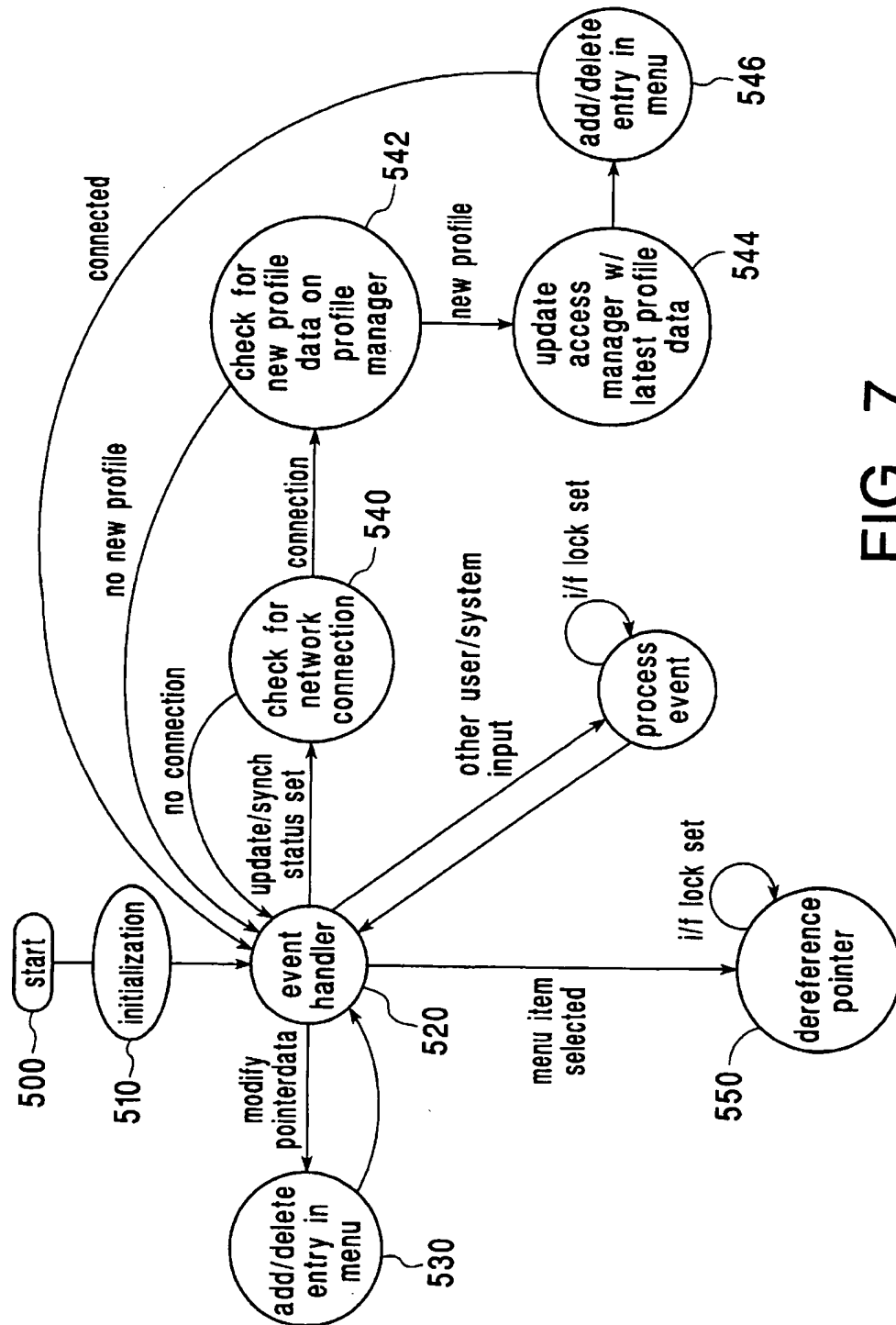


FIG. 7



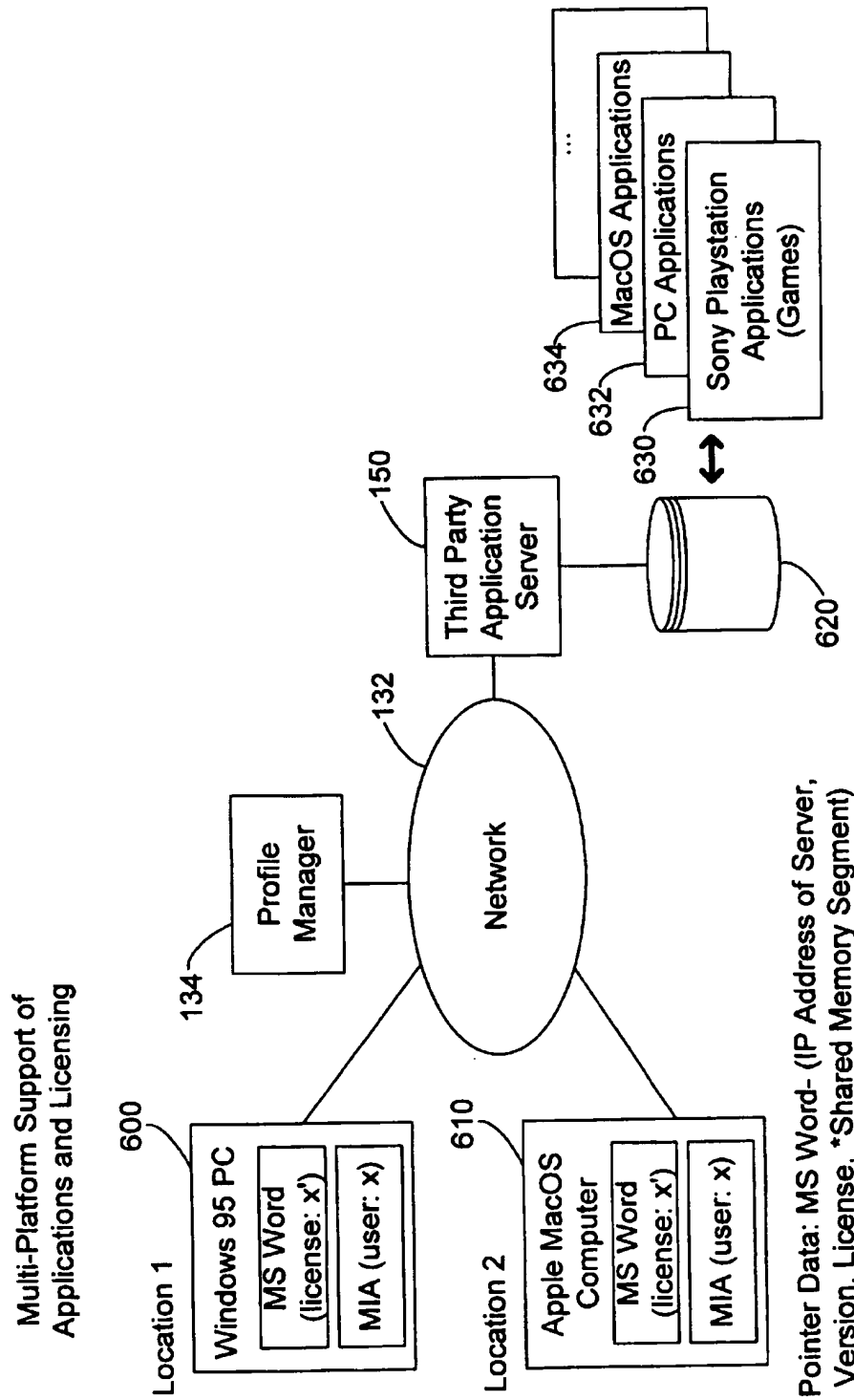


FIG. 8

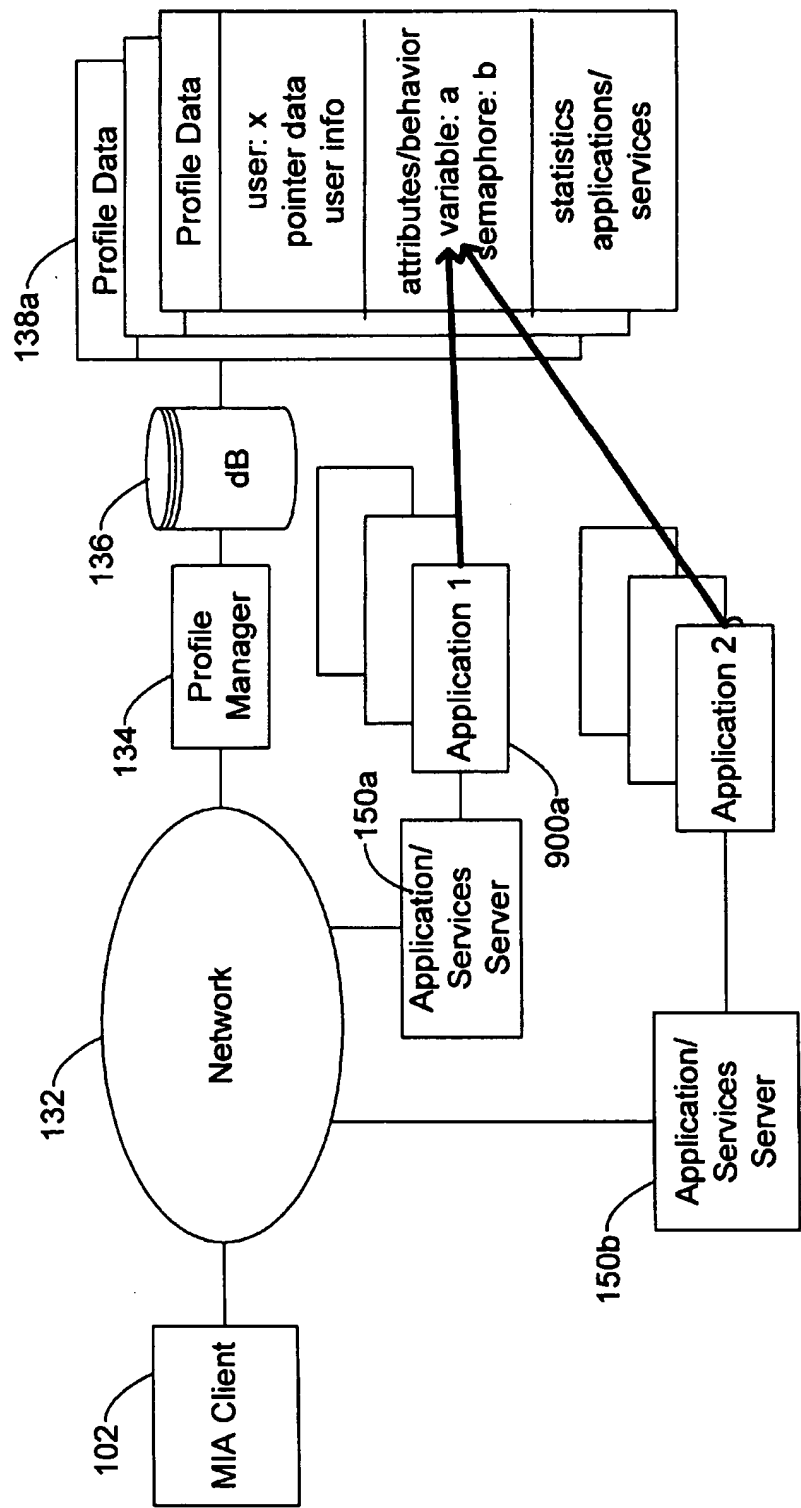


FIG. 9

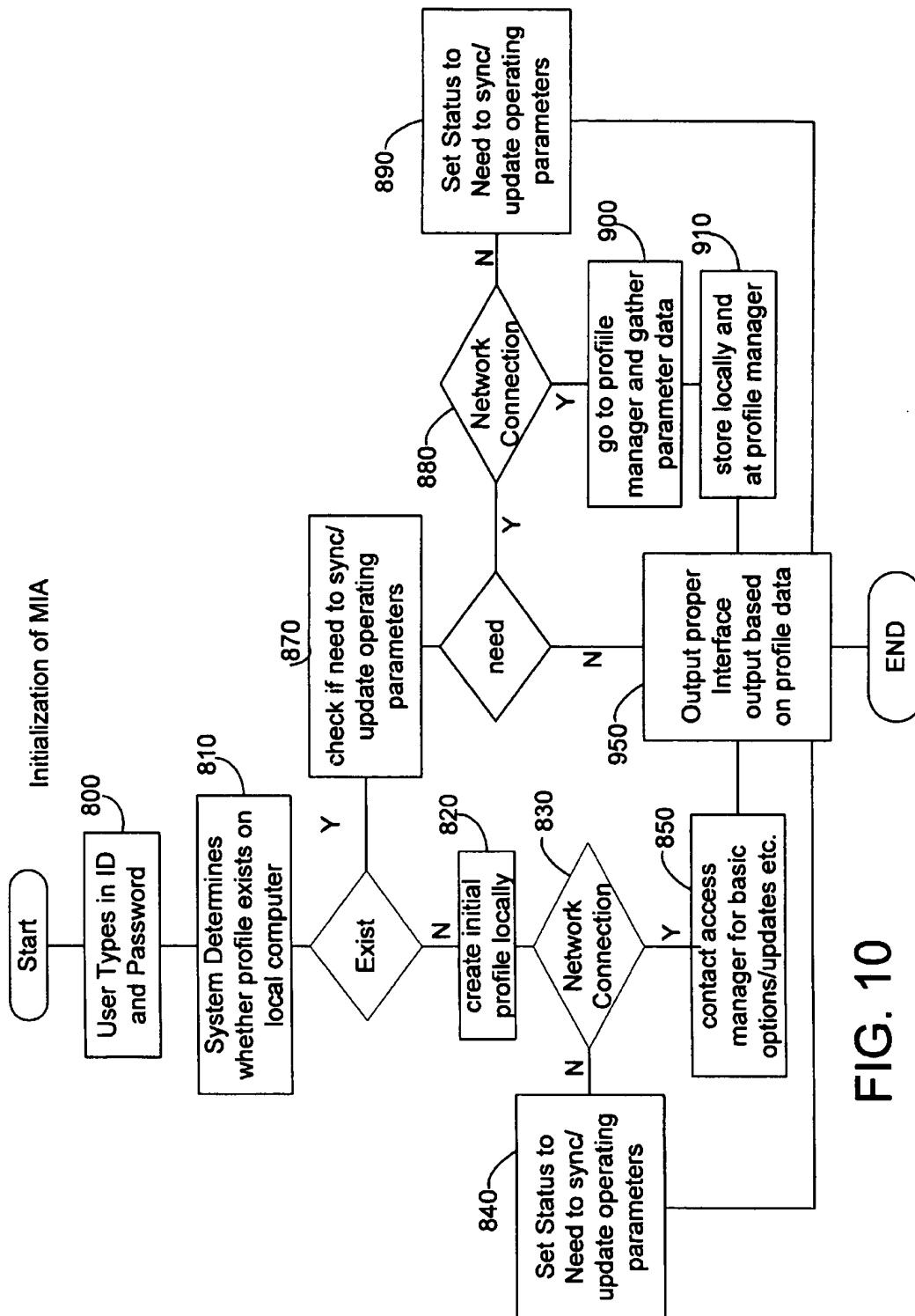


FIG. 10

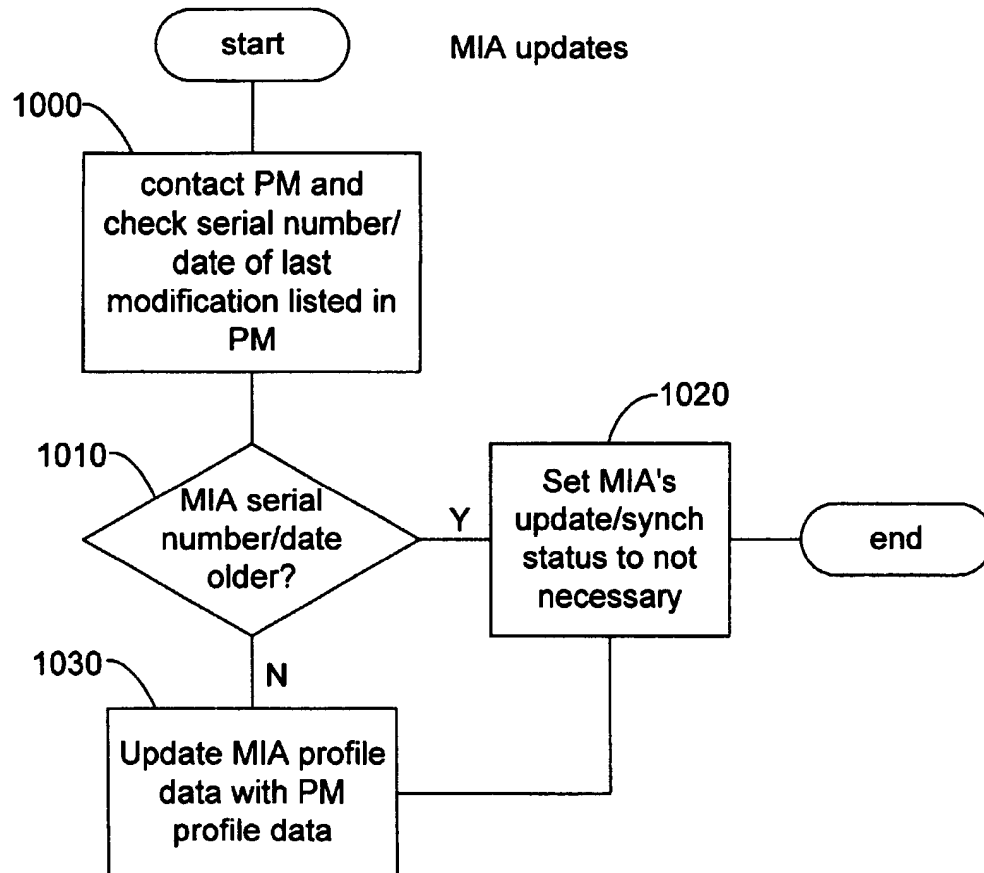


FIG. 11

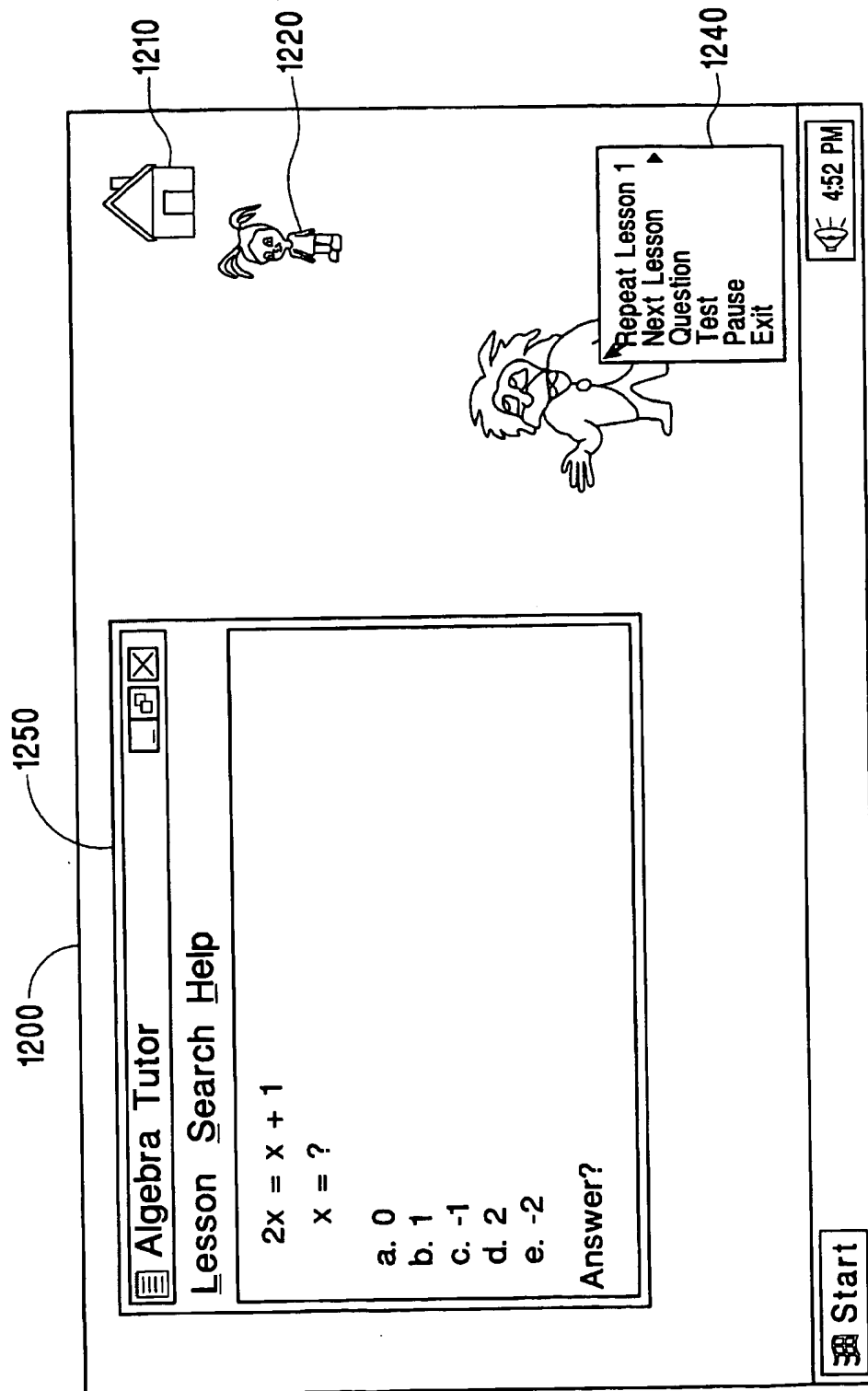


FIG. 12

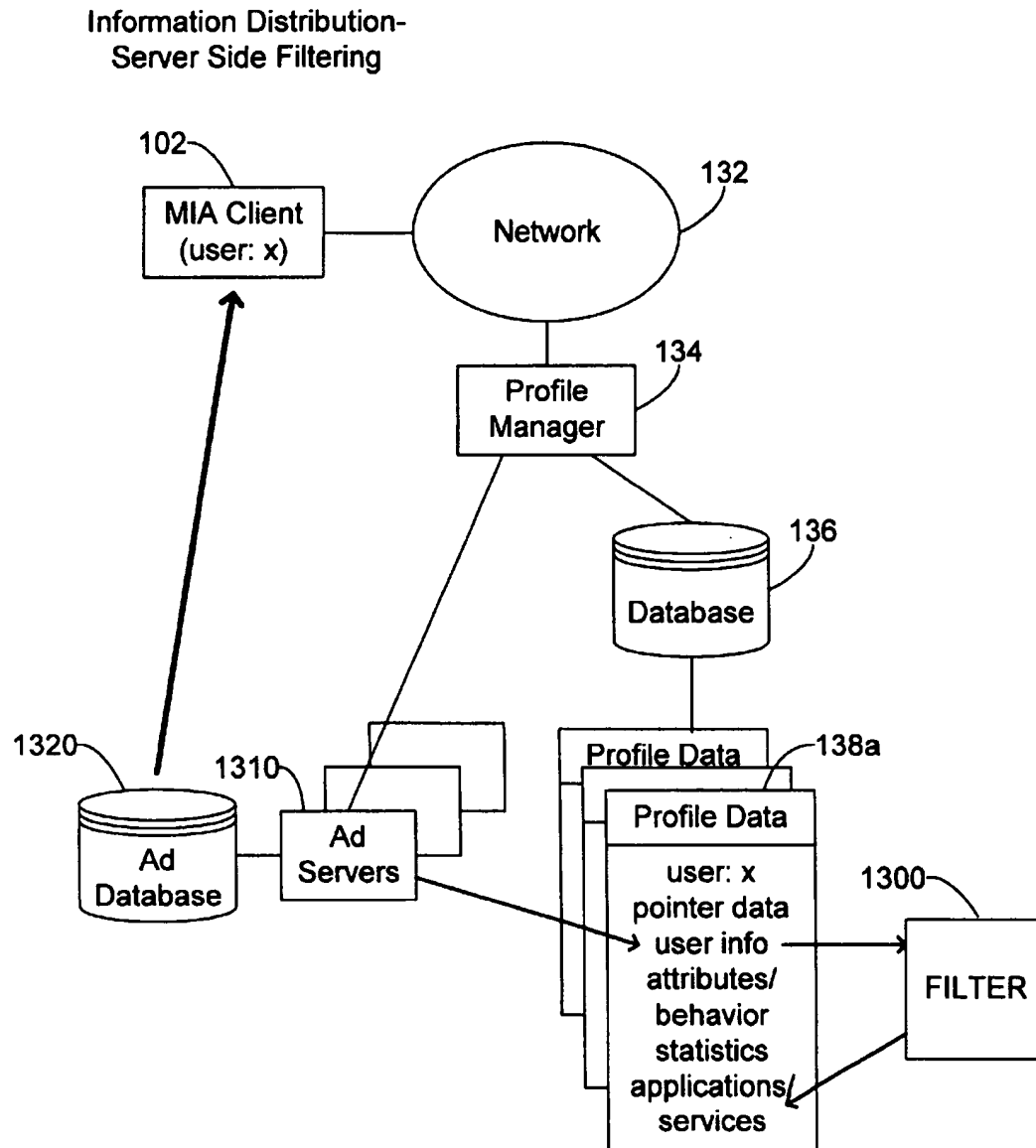


FIG. 13

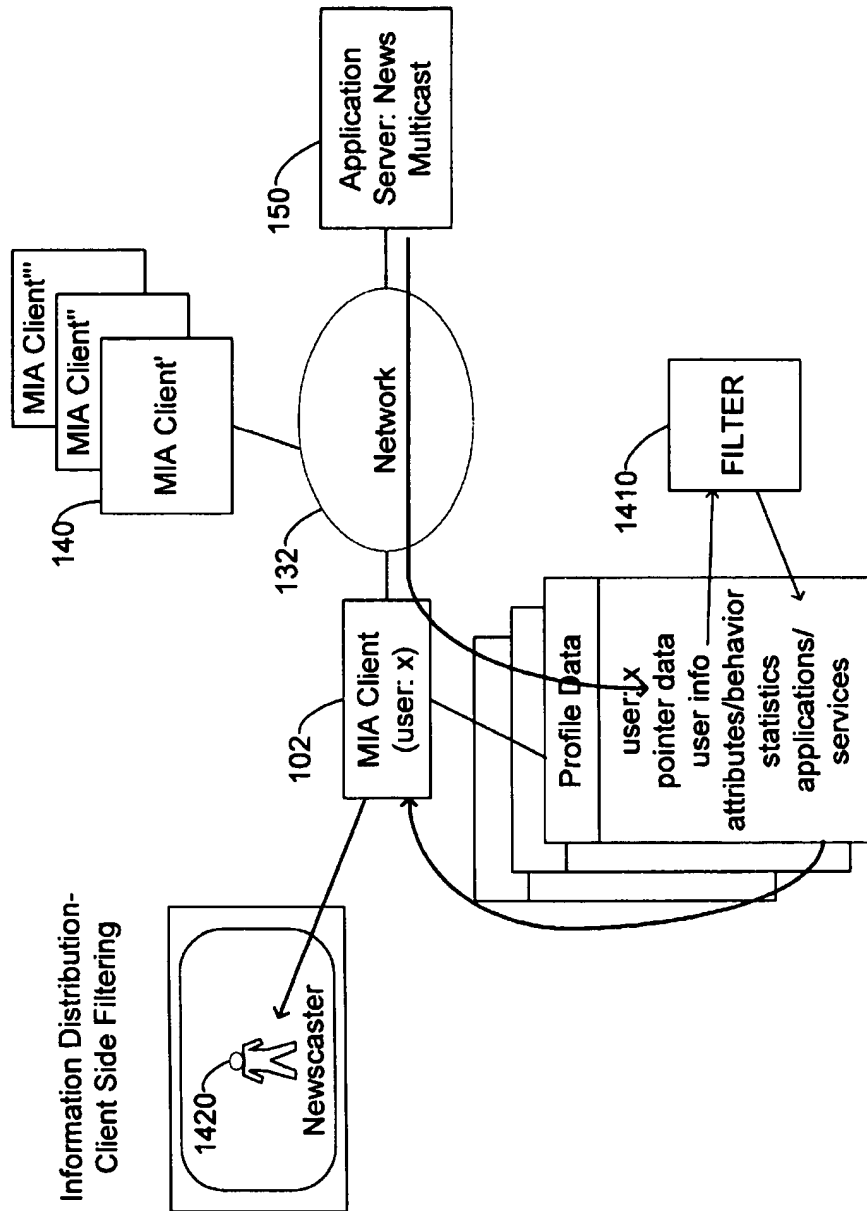


FIG. 14

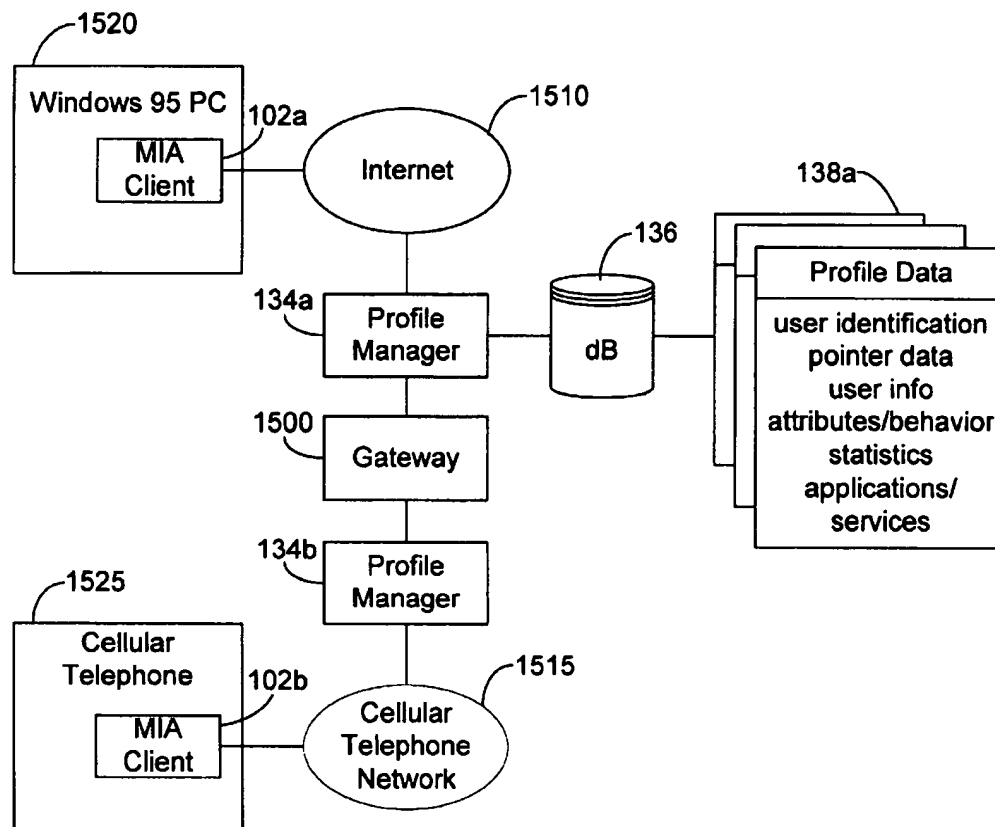


FIG. 15



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## SYSTEM AND METHOD FOR IMPLEMENTING AN INTELLIGENT AND MOBILE MENU-INTERFACE AGENT

### FIELD OF THE INVENTION

The present invention relates generally to the field of computer networks. More particularly, the present invention is directed to an information management and storage system and method. The present invention is further directed to a mobile interface agent that can be used to dynamically access resources stored either locally in the computer device or across a network including programs, applications, bookmarked URLs, user profiles, IP addresses, telephone numbers, television channels, radio stations, and the like that are specific to a user via any computer device. Moreover, the present invention relates to a per user based licensing model that allows the user to locally or remotely access and use computer programs from any computer device.

### BACKGROUND OF THE INVENTION

Most computers and portable digital assistants (PDA) have an operating system (OS) such as MS-DOS, UNIX, Windows 98/NT/CE, or Linux loaded thereon for managing basic operations. In general, an OS apportions the computer's main memory, handles requests, receives and transmits instructions to and from the input/output (I/O) devices, manages the flow of information into and out of the main processor and the I/O devices, and performs other tasks that are commonly known.

The OS is also used to organize and manage menu items such as software programs, applications, files, folders, documents, and the like that are stored on the computer or PDA. A user interface in an OS generally includes "pointers" to software programs, applications, files, folders, documents, and other menu items. A pointer in this context is a reference to a type of menu item that can be accessible on the computer, PDA or a server.

In the current versions of the Windows 98/NT (believed to be a registered Trademark of Microsoft Corp.) OS, pointers are commonly used to retrieve/access menu items. Pointers can be found in a "Start" menu bar on the Windows 98/NT user interface and includes a list of pointers to folders, files, and programs (e.g., word processing program, spreadsheet data file, personal software folder, etc.). For example, FIG. 2 illustrates a screen shot of a conventional Windows NT "Start" menu bar.

The "Start" menu bar's main function is to provide easy access to commonly used applications and files. The menu bar also has some basic configuration capability so that a user can personalize the pointer data by adding or removing pointer data found in the menu bar. However, the "Start" menu bar information and configuration for a particular user is limited to the personal computer on which the configuration and pointer information reside. Hence, a user using a different personal computer cannot dynamically recreate the configuration and pointer information stored on another personal computer. Further, the menu bar does not have any intelligence about a network connected to the personal computer so a user may not receive accessibility information about pointer data that may depend on a network connection. Even further, the current Windows "Start" menu bar information cannot be accessed across multiple operating systems or platforms such as on a Macintosh computer running MacOS or within a web browser.

Even further, the "Start" menu bar keeps no user information or profile data associated with the user of the menu

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bar. A user could save time if the menu bar kept certain user profile data, and applications linked to the menu bar could access this data. Hence, a user who accesses a word processor's Fax template could automatically have the word processor access data kept by the menu bar interface such as his name, address, and telephone number and automatically insert this information into the Fax template. Applications would simply be given some kind of interface such as a software API to query data stored by the menu bar interface, and the stored data could be assumed to be associated with the current user using the menu bar interface.

Computers in many environments are connected to a network such as a local area network (LAN), a metropolitan area network (MAN), or a wide area network (WAN). Computers on the network can conveniently manage and access software programs, applications, files, folders, documents, and the like from another computer or server. For example, most businesses store such menu items at a centralized location, e.g. central server, so that multiple users connected to the network can gain access to them.

Another popular and common use of a computer or PDA is to access information on the Internet. A web browser such as the Internet Explorer 4.0/5.0 (believed to be a registered Trademark of Microsoft Corp.) or Navigator (believed to be a registered Trademark of Netscape, Inc.) is loaded onto the computer or PDA so that the user can access web sites. The web browser is also used so that the user can receive and transmit data. Because the user may visit many web sites during a given session, each web browser allows the users to store and save the addresses (URLs) of commonly visited web sites. This is done by bookmarking them. The user bookmarks commonly visited web sites so that the user can create shortcuts for future use. As a result, the user does not have to type the complete URLs to access these sites.

It is not uncommon for many users to have multiple computers, PDAs, and other computer-related devices. Each individual computer or PDA may include specific menu items and bookmarks that do not exist in another computer or PDA. For example, a computer used at work may be the only device that includes a spreadsheet program while a computer used at home may be the only device that includes bookmarked URLs. Thus, the user will not have access to the bookmarks from the user's work computer and likewise, will not have access to the spreadsheet program from the user's home computer. As a result, this causes much inconvenience and inefficiency for the computer user.

Further, the bookmarks pointer data is specific to a particular output interface; specifically, the web browser. It would be desirable to have bookmarks that can attach various types of output applications for the pointer data contained in the bookmarks. It would also be desirable to be able to attach various types of interfaces to the bookmarks themselves instead of being tied as a feature of a web browser: an independent entity that can optionally attach various kinds of user interfaces such as some kind of intelligent agent using a graphical icon of a human-like figure (for children to interact with on a Windows 95/98 PC) or a voice activated and controlled menu system (for cellular telephones).

It is common for users to have two computers of two different OS's running an application such as Microsoft Word. In order to share a particular Microsoft Word data file, it is currently necessary in the prior art to manually export the file in the required format so that a computer using one OS can read the file of the computer using the other OS. Time would be saved if there existed a mechanism allowing

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files to be exported to the network in a format specified using mobile interface agent application data. When the mobile interface agent running on one OS changes to a computer running a different OS, the mobile interface agent can signal a server daemon to perform an OS conversion of the data and get the data file in the proper format. To the user, this process would be automatic and transparent since the user can simply click a data file, which is a pointer data in his/her mobile interface agent.

Currently, users may save a list of phone numbers on her personal computer's telephone directory software. Similarly, a user may go to a television guide web site and save a list of favorite television shows and times. Time and effort could be saved if the list of phone numbers were transparent to the user's telephone and the list of favorite television shows transparent and accessible to the user's television. In other words, besides the advantage of being cross platform, using the mobile interface agent system allows user profile, configuration and settings information to be handled intelligently by network services to export information between networks such as the Internet, cable television network, or telephone network. This allows not only cross platform advantages, but cross network advantages as well.

Most software programs and applications are currently licensed on either a node locked paradigm in which the software is usable on a per device basis or as a floating license in which a fixed number of licenses are available to a certain group of users limited by the number of concurrent users. In the case of node locked licensing, a user is generally not allowed to install a software program in multiple computers unless a software developer grants a license to the user for such use. Thus, most users cannot install the same software program on both their home and work computers unless the user purchases two identical programs (one for home and one for work). For floating licenses, the number of instances of program execution is tracked and any additional attempt to execute a program above the licensed limit is blocked by some kind of license manager. However, this method does not allow the tracking of the usage of specific users and involves guessing an optimal number of concurrent licenses to purchase so that users are not blocked from using the program while minimizing the cost of the licenses. Also, current licensing models are generally restricted by platform so that a user with a license for a software program is allowed to re-install the program when the user is changing/upgrading computers of the same platform. However, when the user is changing to a different platform such as from a Windows 98 device to an Apple MacOS device, the re-installation is not possible.

The trend in the future is that many software programs and the like may be licensed per user rather than per device/platform or number of concurrent users in a network. In this case, the user has a license to use such programs from any computer that is capable of running such programs. The present invention provides a system and method for implementing such a licensing model so that the user can access and run programs from any computer and from any geographical location.

Accordingly, the ability to dynamically access any software programs, files, documents, URL bookmarks, IP addresses, telephone numbers, television channels, radio stations, and the like from any computer is highly desirable. There is a need for a system and method that can provide access to such menu items and bookmarks using any computer.

#### SUMMARY OF THE INVENTION

It is an object of the present invention to provide a system and method that allows a user to access specific documents,

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files, programs, applications, URL bookmarks, IP addresses, telephone numbers, television channels, radio stations, and other menu items from any computer device located in any geographic location.

It is another object of the present invention to provide a system and method that allows a user to access specific documents, files, programs, applications, URL bookmarks, IP addresses, telephone numbers, television channels, radio stations, and other menu items using a mobile interface agent.

It is yet another object of the present invention to provide a system and method that allows different applications or services to share information between them.

It is another object of the present invention to provide a system and method that allows applications and services to access user profile information.

It is another object of the present invention to provide a system and method that allows applications and services to access user configuration and settings information.

It is another object of the present invention to provide a system and method that allows a mobile interface agent to be accessible by a user using any computer type device connected to the network.

It is another object of the present invention to provide a system and method that allows an intelligent platform or OS conversion of documents, files, or other data that are listed in mobile interface agent pointer data.

It is another object of the present invention to provide a system and method that allows a mobile interface agent to be accessible by a user using any digital communication device such as a cellular phone or a cable set top box that is connected to the network.

It is another object of the present invention to provide a system and method that allows a profile manager to export a user's profile, configuration, or settings data from one communications network such as the Internet to another network (such as the cellular phone network or the cable television network) to be accessible by mobile interface agents or other software or devices on the other network.

These and other objects of the present invention are obtained by providing a network based mobile interface agent. The mobile interface agent can be accessible using a computer, cable set top box, cellular phone, or other device from any geographical location. Once the mobile interface agent has been accessed, the user can gain access to any documents, files, programs, applications, URL bookmarks, and other pointer data that are available to the user. The mobile interface agent is basically an agent that allows the user to access documents, files, programs, applications, URL bookmarks, IP addresses, telephone numbers, television channels, radio stations, and other menu items from any computer that is connected to a network. The present invention also provides a method for remotely accessing and using computer programs from any computer device based upon a per user licensing model.

#### BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects and advantages of the present invention will become apparent and more readily appreciated from the following detailed description of the presently preferred exemplary embodiment of the invention taken in conjunction with the accompanying drawings, of which:

FIG. 1a illustrates a user login screen associated with a mobile interface agent in accordance with the present invention;

FIG. 1b illustrates a graphic interface used by a mobile interface agent once a user has logged on in accordance with the present invention;

FIG. 2 illustrates a screen shot of a conventional Windows NT "Start" menu bar;

FIG. 3 illustrates a block diagram of an information and storage system implementing a mobile interface agent in accordance with the present invention;

FIG. 4 illustrates a detailed block diagram of a mobile interface agent in accordance with the present invention;

FIG. 5 illustrates a detailed diagram of a profile manager interacting with a mobile interface agent in accordance with the present invention;

FIG. 6 illustrates the relationships between the mobile interface agent, the profile manager, and the application/services server in accordance with the present invention;

FIG. 7 illustrates a state diagram for the mobile interface agent in accordance with the present invention;

FIG. 8 illustrates an implementation of the present invention using multiple platforms;

FIG. 9 illustrates an implementation of the present invention using multiple application/service servers;

FIG. 10 illustrates a flow chart for initializing and creating a mobile interface agent in accordance with the present invention;

FIG. 11 illustrates a flow chart for synchronizing and updating a user profile in accordance with the present invention;

FIG. 12 illustrates a graphical mobile interface agent and a visiting graphical mobile interface agent used for educational purposes on a user interface screen in accordance with the present invention;

FIG. 13 illustrates an implementation of the present invention having an information distribution with client side filtering;

FIG. 14 illustrates an implementation of the present invention having a third party server communicating with the profile manager; and

FIG. 15 illustrates an implementation of the present invention having profile managers of multiple communication networks connected by a gateway.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The preferred embodiments of the present invention will now be described with reference to FIGS. 1-15, wherein like components/steps are designated by like reference numerals throughout the various figures. As noted above, conventional systems and methods for information management, retrieval, and storage can be inefficient and burdensome. The present invention overcomes the disadvantages of prior art systems and methods.

The present invention is directed to a mobile interface agent (MIA) that is used to store, distribute, and access information. The MIA is specifically used to access menu items (e.g., software programs, applications, files, folders, documents, telephone numbers, radio stations, television channels), URL bookmarks, and user profile data. The MIA is also used to periodically update or query user profile data, facilitate the sharing of memory and data structures between applications/services both local and remote, allow various types of user interfaces to be attached (voice menu system, human-like graphical icon, etc.) and perform intelligent multi-platform conversion of application data.

FIG. 1a illustrates an example of a user login screen associated with the MIA that is running as software on a computer or PDA device. FIG. 1a illustrates a conventional log in window showing a userid dialog box for inputting the userid code and a password dialog box for inputting the user's pre-selected password code. Once the correct userid and password codes are inputted into the two boxes, the user can now access and use the MIA. Once the user has successfully logged in, a graphical interface such as that illustrated in FIG. 1b is displayed to the user. Although FIG. 1b illustrates one such user interface that may be used in the present invention, other interfaces having different menu items than those illustrated herein may be included. As described in more detail later herein, the menu items/pointers shown in the user interface can be used to access and retrieve user specific resources and information.

FIG. 3 illustrates a block diagram of an information and storage system implementing an MIA in accordance with the present invention. The diagram illustrates three sections of the overall system. Section 104 represents user input/output (I/O) components of a user interface that can be used with the present invention. Section 106 represents a local memory that is used to store profile data for a particular user. Section 108 represents a network that is accessible by a computer (standalone, LAN, MAN, WAN), a PDA, a television (cable network), or a cellular phone (cellular network). Other networks that are accessible using different electronic devices that are now specifically mentioned herein can also be used with the present invention.

The MIA 102 interfaces the three sections (user I/O section 104, local memory section 106, network section 108) of the system. The MIA 102 is used to manage, access, retrieve, etc. information from the network and local memory. The MIA 102 is also used to initiate programs, applications, URL bookmarks, and other menu items, and can be implemented by way of software, firmware, or hardware.

The MIA 102 receives input commands through an input interface 110 and transmits output information through an output interface 112. Several methods of inputting commands via the MIA 102 can be used with the present invention. For example, the user can input commands via an action command 114. The action command 114 can be an action such as dragging and dropping a document, folder, etc., or selecting and clicking a specific menu item. The action command 114 is generally performed using a conventional keyboard, mouse, or pad. The user may also input commands to the MIA 102 via a voice command 116. A voice recognition program is commonly used to provide the capability to input the voice command 116. Examples of voice commands are the following: "MIA, what time is it?" or "MIA, find a Korean restaurant within 5 miles from my home." As another example for cellular phones, the MIA 102 could accept voice commands such as "Call Mom" or "Send phone conversation to my E-mail". Another type of input command that can be used is a scheduled event command 118. An example of the scheduled event command 118 includes launching certain applications at a specified time. Also, scheduled event command 118 can launch applications with a scheduled activity such as when a system backup program is initiated. Lastly, other event command 120 includes other types of commands that are commonly associated with external agents or modules that are unrelated to the user. Examples of such other event command 120 is when one MIA attempts to contact another MIA or when a request is received from another input source other than the user (e.g., profile manager 134).

The MIA 102 will also output information in different forms. The most notable output information is when MIA 102 launches an external application 130 such as Microsoft Word or Excel. The MIA 102 can also launch an application 128 via the output interface 112. Alternatively, the MIA 102 can itself drive output to the user that includes graphics 122, animation 124, and sound/music/voice 126. In certain embodiments, the MIA 102 will use appropriate types of output for the particular device that it is running on. For example, an audio message output for a cellular telephone, text output for a television screen, etc.

The MIA 102 is also coupled to a network 132 so that a user can access software programs, applications, files, folders, documents, services, URLs, IP addresses, telephone numbers, television channels, radio stations, multimedia data, user profile data, other MIAs, and other items located remotely on the network. The MIA 102 can connect to the network 132 via the Internet, LAN, MAN, WAN, cable TV network, cellular phone network, etc. These items are stored either in an Application/Services (AppServ) server 150 or a master database 136. The AppServ server 150 is generally used by third parties to store applications that can be retrieved by the MIA 102 for the user or that execute other services on the network. When a computer device having the MIA 102 is connected to the network 132, the user can access applications/services from the AppServ 150 and profile data 138a from the master database 136. The user can access such information using any computer device from any geographic location so long as the user is able to connect to the network 132.

A profile manager 134 is connected to the network 132 and manages the contents of the master database 136, which includes profile data 138a. The profile manager 134 is responsible for managing and updating a user's profile data 138a that is stored in the master database 136. The master database 136 may be a part of the AppServ server 150 or can be a database in another server.

The local memory 106 includes a local database 160, which further includes a profile data 138b. Profile data 138a, 138b are stored in two locations; in the database master 136 and also in the local database 160 in a form of a "cached" copy. The profile data 138a, 138b must be synchronized for each MIA user.

When a particular user accesses the MIA 102 with a computer device for the first time on that device, a copy of the profile data 138a needs to be cached to the local memory 106. The MIA 102 will send a request to the profile manager 134 to send a cached copy of the profile data 138a to the local database 160 in order to create the profile data 138b. Information specific to a particular user is stored in the form of the profile data 138a, 138b.

When the MIA 102 is first used, it will contact the profile manager 134 to initialize itself. From then on, the MIA 102 will periodically update and synchronize itself with the profile data 138a. The profile manager 134 will track changes to the MIA 102 for a particular user.

As discussed earlier, the profile data 138a, 138b needs to be synchronized whenever possible. In certain instances when a network connection between the MIA 102 and the network 132 is not established, modifications and changes are stored in the local database 160 in the form of profile data 138b. Thereafter, when the network connection is reestablished, these modifications and changes in the local database 160 will be synchronized with the profile data 138a in the master database 136.

There may also be multiple MIAs 140 connected to the network 132. MIAs 140 may be on other computer devices

or may be the same device. Each MIA is specific to a particular user or users. Network 132 can also be used to transfer information, files, data, applications, etc. between the MIA 102 and other remote MIAs 140. For example, the MIA 102 that is specific to user X could be used to transmit information to another user Y through MIA 140.

There are countless uses of the present invention. For example, the present invention can be used to conduct online financial transactions more efficiently. The MIA 102 can be used to allow multiple financial transactions using billing or bank information specific to the user. Another implementation would be to use the user profile on the network for online advertising or promotional services. Yet another implementation would be for an application to check whether any or certain other applications are running concurrently. For instance, a chat/messaging program can check to see if a user is running any educational or instructional applications before sending a message or chat request to the user. A word processing program could be used to automatically look into the user profile database and pull out the user's address and name and automatically insert this information into document templates for a letter, resume, etc.

The profile data 138a, 138b includes information relating to different fields of a particular user. These fields include a user identification 170, pointer data 172, user information 174, attributes/behavior 176, statistics 178, and applications/services 180. First, the profile data 138a, 138b includes a user identification field 170 for identifying a particular user. For example, identification codes such as "jokim123" or "11234678" can be used so that the MIA 102 can identify the code with a particular user.

Pointer data 172 can be used to quickly access an application, service, or other menu item. The pointer data 172 is similar to bookmarks used in web browsers, but can include more than URLs. For example, pointer data 172 can be used to retrieve and access documents in multiple formats, applications, application data, images in various formats, etc. The pointer data 172 can also be used to properly display pointers. For example, a URL pointer will include data of the browser location such that the browser is launched when a particular URL is requested. Pointer data 172 may exist either locally in the computer device or may exist as a resource accessible across a network.

User information 174 includes user information such as name, age, sex, address, occupation, salary, etc. This information is updated continuously as the data changes with the particular user.

Attributes/behavior information 176 includes information and data relating to the user interface. This information includes graphics and animation data specific to a particular user interface. For example, attributes and behavior data are used to create a user interface that is more personal to the user. Attributes include specific characteristics such as strength, charm, etc. that can be used to represent the user through the user interface. For example, an attribute could be a type of character such as a teddy bear that the user interface will use to graphically represent himself/herself. User behaviors such as playful, cute, or sarcastic can also be used to create an interface that interacts with other users in a particular manner. Inputting a particular attribute/behavior into the user interface allows the user to interject artificial intelligence to the user interface.

Statistics information 178 includes data such as how many times a particular menu item has been accessed or the number of times a particular advertisement has been accessed. Examples could include the number of cyber

dollars used in e-commerce transactions or the amount of time the user was connected to the Internet.

Applications/services data 180 includes the MIA specific data required by the applications/services. This includes application and services data using the user interface, licensing information for applications, user and password information to access network services, and any data related to the MIA that an application or service would like stored.

Applications/services data 180 include any data required by a particular application or service associated with the menu user interface. For example, a service that provides children's stories in audio form through an animated character can be stored in the story data in a data structure of the MIA 102. Another example would be for an application such as Microsoft Word (believed to be a registered trademark of Microsoft, Inc.) to be able to store the number of times that the program was accessed and for how long. The previous example would be beneficial where the copy of Microsoft Word was stored across a network and the client using an MIA was paying to use the Microsoft Word application on a per usage basis.

Next, applications or services (such as external application 130) can have the ability to query or modify data relating to profile data fields. For example, when a user is running educational software via the MIA 102, the user can set a variable in the attribute data field 176 in the form of DO\_NOT\_DISTURB. This will prevent other MIAs 140 from interrupting the user until the user has completed the session. For example, when another MIA 140 user requests a chat session with the MIA 102 user during the educational session, the DO\_NOT\_DISTURB variable is presented to a chat application. The chat application can then disable notifications for incoming chat requests or queue the request until the MIA 102 user has completed the educational session. Other types of locks and semaphore data could similarly be established within the attribute or other fields.

Profile data 138a and 138b can also be shared among other applications or services. Using the example described above, a child's story service can store which stories were accessed by a particular user through the MIA 102. This type of information can be provided to, for example, a toy manufacturer, which can then use the information to send promotional materials relating to the story to the user. The promotional materials can be sent via the Internet or traditional mail.

Applications/services data 180 can be either external to MIA 102 or internal to the MIA 102. For example, a menu item can be built into the MIA 102 called "recommend," which can include options such as "Chinese restaurant." The MIA 102 can also check for other information regarding the user's preference from the profile data 138a, 138b. For example, the user may include in the profile data 138a, 138b that he/she enjoys spicy food. In this case, the name and location of a Chinese restaurant located near the user that serves spicy food will be displayed to the user. In another example, a menu item such as "Sing" can be used to animate the graphical user interface agent to play music or sing while the character is shown on the screen. As can be appreciated, there are countless applications and uses associated with the profile data 138a, 138b.

FIG. 4 illustrates a detailed block diagram of an MIA in accordance with the present invention. In one embodiment of the present invention, the MIA 102 includes a controller 200, a pointer resolver 206, a scheduler 208, an output filter 210, a connection detector 212, a network interface 214, an application server interface (AppServ interface) 216, and a

profile filter 218. The controller 200 is coupled to the input interface 110 and the output interface 112 via the output filter 210. The controller 200 receives input commands via the input interface 110 and decodes them into a more compact or standardized code. The controller 200 then processes the input commands in order to determine how to respond to them.

As discussed earlier, a pointer is a link/shortcut to an item such as a file, URL, IP address, telephone number, television channel, radio station, application, or service. When a user activates a pointer using one of the input commands, this command signal will be transmitted to the pointer resolver 206 via the input interface 110 and the controller 200. The pointer resolver 206 then receives the decoded input commands and accesses the corresponding item. For example, a URL access may launch a web browser or a word processing document will launch the word processing software/application.

The MIA 102 can also have menu functions or applications to schedule certain actions to be performed at specified periods. The scheduler 208 is used to queue requests for certain actions to be executed at specified periods. For example, the MIA 102 can have a backup application that backs up certain files weekly at a specified time, or an application that connects to the Internet and loads certain URL pages for later viewing, or a video cassette recorder that records a user's favorite television shows.

The output filter 210 is used to enable/disable functionality accessible by the user depending on various state information. For example, access to a particular service initiated via a menu item may be disabled using the filter 210 if a user has not paid for the particular service. As another example, when the connection detector 212 detects that there is no network connection, URL data present to the user as menu items may be made inaccessible or invisible to the user. As yet another example, a multicast video stream including various news segments could be sent to the user. The video stream would be tagged with special codes indicating what kind of news it represents. The output filter 210 would disable video news segments from being displayed on the user's output screen that did not match the user's indicated preferences stored in the profile data 138b. The network interface 214 is used to connect the controller 200 to the network 132.

Also depicted in FIG. 4 as part of the MIA 102 is the AppServ interface 216. Applications/services may share data or access a user's MIA profile data 138b via the profile data filter 218. The AppServ interface 216 is used to access profile data 138b by applications or services. AppServ interface 216 is preferably a software API with library functions used to write and read appropriate information. Security levels could also be implemented to allow the user to select the level and kind of information accessible to a particular application. Further, applications and services will have an interface to change, write and read data into a user's profile data 138b. In a similar way, an interface may also be provided to directly access profile data 138a stored on the network.

The controller 200 will write and read data to the profile data 138b for a particular user and also control access to this data by applications and services through the AppServ interface 216. The profile data filter 218 is used by the controller 200 to restrict various data from being written to the profile data 138b. The profile data filter 218 could also be used for non-security reasons. For example, if a multicast data stream were sending news information, then the profile

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data filter 218 could be programmed by the controller 200 based on rules supplied by the user's profile data 138b to only write certain news items to be read by the user at a later time.

FIG. 5 illustrates a detailed diagram of a profile manager 5 interacting with a mobile interface agent in accordance with the present invention. The embodiment depicted herein is based on the UNIX BSD Sockets interface. One skilled in the art can easily implement other socket interfaces in accordance with the present invention.

When the MIA 102 and the profile manager 134 are interacting, the MIA 102 can obtain profile data from the profile manager 134 that is stored in the database 136. Also, profile data 138a can be updated and synchronized during such interaction. Finally, the MIA 102 can request information from the profile manager 134 such as the IP address of a server for a particular service, information about another user, online connection status for a list of contacts, etc.

During operation, a user 300 first inputs a command to the MIA 102. If such command requires the MIA 102 to interact with the profile manager 134, then an initial request is sent to the profile manager 134 from the MIA 102. This request is received by a profile manager server daemon 310 that is listening on a specific port. The parent daemon 310 then forks a new child process 312 to handle further interactions with the MIA 102. The child process 312 then handles subsequent requests from the MIA 102. The embodiment depicted herein uses a UNIX sockets system. In a similar fashion as the MIA 102 and profile manager server daemon 310 relationship, the profile manager child process 312 sends a request to a SQL database engine daemon 314 through another specific port. The database engine daemon 314 then forks a SQL database child process 316 to handle any queries from the profile manager child process 312. The SQL database child process 316 then interacts with the profile data database 136 and handles queries, directives, or modifications to the profile data 138a.

In some embodiments, the profile manager 134 uses a referral system such that a single server does not maintain all of the user profile data, but is rather distributed throughout multiple and redundant servers. The referrals will be passed back to the MIA 102 that will then query the next profile manager servers 320.

FIG. 6 illustrates the relationships between the MIA, the profile manager, and the application/services server in accordance with the present invention. The MIA 102, the profile manager 134, and the AppServ server 150 can interact directly/indirectly with each other.

The following examples describe a sample of the commands/responses between the MIA 102, profile manager 134, and the AppServ server 150. The MIA 102 will interact with the profile manager 134 when a user is connected to the network. The MIA 102 will transmit a request 400 to the profile manager 134 when a network connection is present and MIA needs to access the profile manager 134. The profile manager 134 will then respond to the MIA 102 in step 402 by authenticating the user code so that the MIA can have access to the profile manager 134. The MIA 102 can also transmit a request 420 to the profile manager 134 to update/synchronize the profile data.

When calling up applications/services, if the MIA 102 cannot locate the application/service requested on the local device, the MIA 102 will interact with the profile manager 134 before requesting the actual application/services from the AppServ server 150. For example, the MIA 102 will send a request 430 to the profile manager 134 to determine the

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location of the desired application/service on the network. The profile manager 134 will then respond in step 432 with the location of the application/service. The MIA 102 uses this information to send a request 434 to the AppServ server 150 to initiate the application/service. The AppServ server 150 will then initiate the application/service in the response 436.

One of the advantages of the present invention is that it allows a licensed program/service to be accessible for a particular user on a per user basis, without regard to platform, and anywhere in the world rather than on a particular machine. The licensing aspect of the present invention can be implemented in different ways. The preferred embodiment depicted herein shows the AppServ server 150 interacting with the profile manager 134 for a particular user's licensing information. Once the MIA 102 requests an application/service in request 434, the AppServ server 150 communicates with the profile manager 134 to check the licensing information in step 440. After the profile manager verifies that the user is licensed to use the requested application/service in step 442, this verification is sent to the AppServ server 150 and/or MIA 102. The AppServ server 150 then returns the application/service to the MIA 102. Alternatively, the MIA 102 could directly send the licensing information to the AppServ server 150. The AppServ 150 can also access and/or modify the profile data managed by the profile manager 134 in step 450.

FIG. 7 illustrates a state diagram for the MIA in accordance with the present invention. After the start state 500, the MIA 102 enters the initialization state 510 where routine initialization is performed. In addition, MIA 102 will check to see whether it is connected to the network. If it is not connected to the network, then the MIA 102 may disable network dependent menu items such as URLs or applications that are on the network. Similarly, MIA 102 will check to determine what computer device it is on and based on the device's profile and list of registered applications, it will enable local applications and services that are available.

After the initialization state 510, the MIA 102 will then enter "event handler" state 520. In this state 520, the MIA 102 waits for an input such as an action command 114, voice command 116, scheduled event command 118, or other event command 120. When an input command is received by the MIA 102, the command is decoded. Then, based on the kind of input command received, an appropriate handler will be activated. For example, if a menu item is selected to be modified, added, or deleted, the MIA 102 will enter state 530, which will handle the modification of the menu item. Another example is when an update to the profile manager 134 is requested, then the MIA 102 will check for a network connection in state 540 and if the connection exists, it will check for the new profile data on the profile manager 134 in state 542. The MIA 102 will then update the profile manager 134 in state 544, and clear the request to update/synch profile information in state 546.

If the user selects a menu item, then the MIA 102 will enter state 550. In state 550, the MIA 102 will check the menu item and dereference a particular pointer. For example, if it is a URL, then the MIA 102 may launch a web browser with the requested URL. If, on the other hand, a local application is selected, then the MIA 102 will launch that particular application. For an application residing on the network, the MIA 102 will locate the application and send the appropriate request for the application to the AppServ server 150.

For some other kind of input command that does not utilize the menu item interface, an appropriate event handler

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will be called. This could take the form of, for example, the menu interface having a different graphical look, or it could be dragging the menu interface onto a trash can icon to log the user out of the MIA 102.

FIG. 8 illustrates an implementation of the present invention using multiple platforms. A first platform 600 represents a computer device using a Windows based OS and the second platform 610 represents a computer using a Mac based OS. This figure illustrates how MIA 102 can be used both on a PC system 600 at a first location and also on an Apple Macintosh system 610 at a second location. Stated broadly, the user can connect to the network 132 and profile manager 134 using the MIA 102 from any computer and location.

When a user implementing the MIA 102 transfers from one computer device to another, then a pointer data that is accessible via network 132 may be valid and kept intact. However, pointer data to local applications may no longer be valid and will be filtered. Also, local applications may require their pointers readjusted if those local applications were resident on the local machine. For example, MIA 102 could have a pointer to Microsoft Word program in location 1 on the Windows 95 machine but can not resolve that pointer now that the user has moved to location 2 on the Apple Macintosh machine. Thus, the MIA 102 may search for Word locally on the Macintosh and adjust the pointer to point to the copy of Microsoft Word on the Macintosh. Further, this allows licensing to be carried with a particular user rather than the software. Hence, the MIA 102 can carry the licensing information for the user and may thus access Microsoft Word on any machine so long as his/her MIA has the proper license. Further, the application could alternatively be accessed via network.

In the case of a network-connected application or some kind of services, AppServ server 150 is connected to network 132, and the MIA 102 may access applications or services remotely. There may exist a plurality of AppServ server 150 on the network 132. Hence the MIA client 102 could request applications directly from some third party applications server 150. An example would be if MIA 102 was running on a Sony Playstation-like device and the user had purchased a license for a particular game. The third party application server (e.g., Sony server) can include a collection of Sony Playstation games 630, and the user can access a copy of the licensed game. Further, the application server could carry all types of applications or services including PC applications 632 or Apple MacOS applications 634. So the user in the second location could request Microsoft Word from the application server 150 and either download the application and run it locally or the application could be run remotely and the display interface returned to the user.

When a user saves a MS Word document from the Windows 95 PC 600 in the profile manager 134 and then later attempts to access the MS Word document from the Apple MacOS machine 610, another feature of MIA is that since it is able to detect/know the platform it is running on and has information about the format of documents that reside on the profile manager, MIA can request a document from the Apple MacOS machine 610 that is converted by the profile manager 134 to the proper format.

FIG. 9 illustrates an implementation of the present invention using multiple application/service servers. The MIA 102, network 132, profile manager 134, profile database 136, and the profile data 138a are similar to those described with reference to FIG. 3. In FIG. 9, however, there is shown

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multiple AppServ servers 150a, 150b. This allows the MIA 102 user to access applications/services via any AppServ server that are connected to the network 132. Each AppServ server 150a, 150b can gain access to the profile data 138a for user information.

Further, applications or services can use MIA's user profile information to add value and functionality. Application 1 900a and application 2 900b can both access a user's profile data as well as shared locks, variables, memory segments, or other data stored in the profile data 138a. For example, a user could use an application 1 900a called global status that sets the user's status information such as "working" or "away" or "do not disturb". Other applications that describe a user's state information such as Mirabilis ICQ (e.g. application 2 900b), which tells other online user's a particular user's status could map a user's state information set by global status to ICQ status and automatically set ICQ status to match global status information.

FIG. 10 illustrates a flow chart for initializing and creating a mobile interface agent in accordance with the present invention. In step 800, a user will input a user id number and a user password to begin accessing the MIA. The user can connect to the logon screen via the Internet or any other network connection. An example of a sample logon screen was illustrated in FIG. 1a. A user enters his ID and password on any machine of any platform that can implement the MIA 102. The option bar may be used to spawn another MIA client or to implement other features accessible outside of user login. Alternatively, the user may have a pre-configured ID associated with a device such as in the case of a cellular phone and thus may not require keyed input of a user ID.

Once the user has logged on, FIG. 1b again illustrates a graphic interface used by a MIA 102 once a user has logged on. In this example, a set of menu's associated with a user's specific configuration and profile is shown. MIA options are accessed through the menu system. In addition to a simple menu interface, a user can elect to associate a graphical icon such as a teddy bear graphical icon or other figure to the menu system.

Next, the system implementing the MIA 102 will determine whether a profile exists on the local computer for the user in step 810. If a user profile does not exist for the user, then a profile is created locally for the user in step 820. After creating the initial user profile, the next step is to determine whether the network connection is established in step 830. In step 850, if a network connection has been established, the MIA 102 contacts the profile manager 134 and determines whether the user id and password entered in step 800 is registered, unless the user has selected an option to not authenticate on each use. If the user is authenticated, then the MIA 102 downloads the appropriate information such as user profile, URL links, applications registered, etc. Some of the information downloaded may depend on the platform, geographical location, etc. that corresponds to the user's connection location. For example, if a user has purchased a Windows 98 only license for MS Word and moved to an Apple MacOS device, then the MS Word menu item may be disabled or not downloaded. As another example, if a user using a cellular phone has not purchased the \*69 callback feature then the voice command "Callback" may be disabled. As yet another example, if the user is shown to be connecting from an IP address known to be in a certain geographical region, or if the user has entered geographical information of a certain country, then advertising information specific to that country or region can be downloaded. The subset of information downloaded can depend on quite a number of variables and downloaded information may be filtered even further by filter 210.



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If, on the other hand, the network connection in step 830 is not established, then the MIA 102 sets some status to indicate that there is a need to synchronize and update the operating parameters in step 840.

If the system determines that a profile exists in step 810, the system checks to determine whether the operating parameters need to be synchronized and/or updated in step 870. If no synchronizing or updating is required, then the appropriate output based on state variables such as network connection, platform, or geographic region of MIA is transmitted to the user based on the user profile data in step 950. If, on the other hand, the system determines that operating parameters need to be synchronized and updated, the system determines whether a network connection is established in step 880. If no network connection is detected, then the MIA 102, in step 890, will set state information requiring the MIA 102 to synchronize/update its profile information with the profile manager 134 once a network connection is detected. If the network connection has been detected, then the MIA 102 will, in step 900, contact the profile manager 134 and download all of the required user profile, application, etc. data. In step 910, the profile manager 134 may update its own information such as last log in time, last connected IP address, last synchronization time, etc. Thereafter, an appropriate output is displayed to the user in step 950.

FIG. 11 illustrates a flow chart for synchronizing and updating a user profile in accordance with the present invention. This flow chart illustrates the process for synchronizing and updating a user profile data that is stored in the profile manager database and in the local memory database using the MIA.

In step 1000, the MIA will contact the profile manager and check the serial number and/or date of the last modification listed in the profile manager database. If the MIA serial number or date is older than the most recently updated serial number or date in step 1010, the MIA may be configured to not update or synchronize its information in step 1020. If, on the other hand, the MIA serial number or date is not older, then the MIA profile data is updated with the profile manager profile data in step 1030. After such updating, setting the MIA's update/synchronize status is not necessary as indicated in step 1020.

FIG. 12 illustrates a graphical mobile interface agent on a user interface screen in accordance with the present invention. A graphical figure representing a MIA 1220 and a home 1210 is displayed in the screen 1200. Left clicking on the MIA 1220 will display the list of MIA menu options shown in FIG. 1b.

Also illustrated is a visiting MIA 1230 named Professor Math. This MIA has a subset of MIA functionality and can be used to access specific options such as executing a link to a lesson such as an Algebra Tutor application 1250. The visiting MIA 1230 could first appear and "knock" on the MIA home 1210 to gain access to a user's desktop 1200. The user may then have a list of available responses such as: (1) allow Professor Math 1230 to enter; (2) ask Professor Math 1230 to go away; or, (3) send a message to Professor Math 1230 to come back later. Educational lessons can be downloaded to a MIA's 1220 local site or can be remotely accessed via the visiting MIA 1230.

By associating a lifelike graphical icon such as the MIA 1220 character attributes can be associated with the MIA such as strength, personality, etc. Further some kind of status bar could be provided with information concerning the MIA 1220 as well as other MIAs. The MIA status bar could also include advertisements from advertisers.

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FIG. 13 illustrates an implementation of the present invention having a third party server communicating with the profile manager. In this embodiment, information distribution is performed on the server side. The example provided herein shows advertisement servers 1310 coupled to the profile manager 134. The ads will have characteristics and keywords associated with them. The ad server 1310 via the profile manager 134 checks the profile data 138a to determine whether users want advertising and if so what kinds of advertising they are interested in. The user information can be very sophisticated and be used to target a very specific audience. A filter 1300 is used to determine which users receive what advertisements. Then the Ad server 1310 places links in the profile data 138a specifically in his/her applications/services area about advertising information. The links will be pointers to the full advertisement in Ad database 1320. The MIA 102 then at some later point can retrieve particular ads and display them to the user through an output source.

FIG. 14 illustrates an implementation of the present invention having an information distribution with client side filtering. In this example, the AppServ server 150 is serving a news feed via a multicast connection to MIA 102 as well as a plurality of other MIAs 140 through the network 132. The MIA 102 accepts the multicast stream but filters the data based on Profile Data 138b kept in the MIA's local memory 106. Thus only a desired subset of multicast news stream data is stored into the local applications/services memory by filter 1410. Later a user may launch a news program in which a newscaster 1420 reads the news stored in local memory 106. The environment the newscaster reads news from could be a PC desktop, a set top box, a mobile telephone, or any other environment that the MIA 102 can run.

FIG. 15 illustrates an implementation of the present invention having profile managers of multiple communications networks connected via a gateway. In this example, a MIA 102a is running on a Windows 95 PC 1520 connected to the Internet 1510. The MIA 102a connects to the profile manager 134a via the Internet 1510 and saves a list of telephone numbers inputted by the user to her MIA 102a. The telephone numbers are subsequently stored in the profile manager database 136 and into the user's profile data 138a.

The gateway 1500 is used to interface certain user profile information or application data from the profile manager 134a connected to the Internet 1510 to the profile manager 134b connected to the cellular telephone network 1515. The cellular telephone network 1515 is connected to MIA 102b which resides as part of the cellular telephone 1525. In this example, the MIA 102b can download the telephone numbers that a user using MIA 102a had originally inputted in her Windows 95 PC 1520 to program telephone numbers accessible via the cellular telephone 1525.

Similarly, this concept can be extended to other types of networks. For example, a user can use a listing of television program listings configured on a MIA running on a PC connected to the Internet to program a cable set top box on a cable television network. As another example, a cable set top box user on a cable television network could use a MIA to record viewing habits. This information could later be transferred from the cable television network profile manager, via a gateway, to a profile manager running on the Internet and be used to determine the types of web banner advertising a user would be interested in viewing.

In the previous descriptions, numerous specific details are set forth to provide a thorough understanding of the present



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invention. However, as one having ordinary skill in the art would recognize, the present invention can be practiced without resorting to the details specifically set forth.

Although only the above embodiments have been described in detail above, those skilled in the art will readily appreciate that many modifications of the exemplary embodiment are possible without materially departing from the novel teachings and advantages of this invention.

I claim:

1. A method for retrieving user specific resources and information stored either on a local device or a network server, the method comprising the steps of:

retrieving a mobile interface from the network server to the local device;

displaying the mobile interface on the local device, the mobile interface including a plurality of pointers corresponding to the user specific resources and information; and

retrieving the user specific resources and information using the plurality of pointers displayed on the mobile interface.

2. A method according to claim 1, wherein the user specific resources and information comprise programs, applications, files, documents, bookmarked URLs, and user profiles.

3. A method according to claim 1, wherein the user specific resources and information comprise television channels.

4. A method according to claim 1, wherein the user specific resources and information comprise telephone numbers.

5. A method according to claim 1, wherein the user specific resources and information comprise television program listings.

6. A method according to claim 1 further comprising the step of licensing the user specific resources to a user based on a per user licensing model.

7. A method according to claim 1, wherein the step of retrieving the mobile interface from the network server comprises the step of retrieving the mobile interface agent user profile and configuration data via the Internet.

8. A method according to claim 1, wherein the step of retrieving the mobile interface from the network server comprises the step of retrieving the mobile interface via one of a LAN, a MAN, and a WAN.

9. A method according to claim 1, wherein the step of retrieving the mobile interface from the network server comprises the step of retrieving the mobile interface via a cellular network.

10. A method according to claim 1, wherein the step of retrieving the mobile interface from the network server comprises the step of retrieving the mobile interface via a television network.

11. A method for retrieving user specific resources and information stored either on a local device or a network server, the method comprising the steps of:

displaying the mobile interface on the local device, the mobile interface including a plurality of pointers corresponding to the user specific resources and information;

retrieving user profile and configuration data from the network server to the local device, wherein the user profile and configuration data is used to update the data associated with the mobile interface;

retrieving the user specific resources and information using the plurality of pointers displayed on the mobile interface.

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12. A method according to claim 11, wherein the user specific resources and information comprise programs, applications, files, documents, bookmarked URLs, and user profiles.

13. A method according to claim 11, wherein the user specific resources and information comprise television channels.

14. A method according to claim 11, wherein the user specific resources and information comprise telephone numbers.

15. A method according to claim 11, wherein the user specific resources and information comprise television program listings.

16. A method according to claim 11 further comprising the step of licensing the user specific resources to a user based on a per user licensing model.

17. A method according to claim 11, wherein the step of retrieving the user profile and configuration data from the network server comprises the step of retrieving the user profile and configuration data via the Internet.

18. A method according to claim 11, wherein the step of retrieving the user profile and configuration data from the network server comprises the step of retrieving the user profile and configuration data via one of a LAN, a MAN, and a WAN.

19. A method according to claim 11, wherein the step of retrieving the user profile and configuration data from the network server comprises the step of retrieving the user profile and configuration data via a cellular network.

20. A method according to claim 11, wherein the step of retrieving the user profile and configuration data from the network server comprises the step of retrieving the user profile and configuration data via a television network.

21. A method according to claim 11 further comprising exporting user profile and configuration data from a first network to a second network.

22. A method according to claim 21, wherein the first network comprises an Internet network and the second network comprises one of a cellular network and a telephone network.

23. A method according to claim 21, wherein the first network comprises one of a cellular network and a telephone network and the second network comprises an Internet network.

24. A method according to claim 11, wherein the step of displaying the user interface on the local network comprises the step of audioloy presenting the user interface on a cellular device.

25. A mobile interface used for accessing user specific resources and information stored either on a local computer device or a network server, the mobile interface comprising:

means for interfacing any local computer device with the network server;

means for presenting a plurality of pointers on any local device corresponding to the user specific resources and information to a user; and

means for accessing the user specific resources and information using the plurality of pointers.

26. A mobile interface according to claim 25, wherein the user specific resources and information comprise programs, applications, files, documents, bookmarked URLs, and user profiles.

27. A mobile interface according to claim 25, wherein the user specific resources and information comprise television channels.

28. A mobile interface according to claim 25, wherein the user specific resources and information comprise telephone numbers.

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29. A mobile interface according to claim 25, wherein the user specific resources and information comprise television program listings.

30. A mobile interface according to claim 25, wherein the plurality of pointers access the user specific resources and information stored on the network server via the Internet.

31. A mobile interface according to claim 25, wherein the plurality of pointers access the user specific resources and information stored on the network server via one of a LAN, a MAN, and a WAN.

32. A mobile interface according to claim 25, wherein the plurality of pointers access the user specific resources and information stored on the network server via a cellular network.

33. A mobile interface according to claim 25, wherein the plurality of pointers access the user specific resources and information stored on the network server via a television network.

34. A mobile interface used for retrieving user specific resources and information stored either on a local device or a network server, the mobile interface being adapted to move from one local device to another and adapted to be displayed on the local device, the mobile interface comprising:

a plurality of pointers that correspond to the user specific resources and information, wherein upon initiating a pointer, a user specific resource or information from either the local device or the network server is retrieved.

35. A mobile interface according to claim 34, wherein the user specific resources and information comprise programs, applications, files, documents, bookmarked URLs, and user profiles.

36. A mobile interface according to claim 34, wherein the plurality of pointers access the user specific resources and information stored on the network server via the Internet.

37. A mobile interface according to claim 34, wherein the plurality of pointers access the user specific resources and information stored on the network server via a cellular network.

38. A mobile interface according to claim 34, wherein the plurality of pointers access the user specific resources and information stored on the network server via a television network.

39. A mobile interface according to claim 34, wherein the user specific resources is retrieved based on a per user licensing model.

40. A system for storing and accessing user specific resources and information, the system comprising:

a network for accessing the user specific resources and information stored in a network server; and

a local device communicating with the network and having a local memory and a mobile interface, wherein the local memory also includes user specific resources

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and information, and the mobile interface includes pointers corresponding to the user specific resources and information that are stored either on the local device or the network server, wherein the pointers provide links to access the corresponding user specific resources and information.

41. A system according to claim 40, wherein the user specific resources and information comprise programs, applications, files, documents, bookmarked URLs, and user profiles.

42. A system according to claim 40, wherein the plurality of pointers access the user specific resources and information stored on the network server via the Internet.

43. A system according to claim 40, wherein the plurality of pointers access the user specific resources and information stored on the network server via one of a LAN, a MAN, and a WAN.

44. A system according to claim 40, wherein the plurality of pointers access the user specific resources and information stored on the network server via a cellular network.

45. A system according to claim 40, wherein the plurality of pointers access the user specific resources and information stored on the network server via a television network.

46. A system according to claim 40, wherein the user specific resources is retrieved based on a per user licensing model.

47. A system according to claim 40, wherein the mobile interface is adapted to be loaded onto the local device from any geographical location so long as the local device is communicating with the network server.

48. A system according to claim 40, wherein the mobile interface is permanently stored in the network server.

49. A system providing a user access to a user specific resource or information using a local device capable of connecting to a network, the user specific resource or information being stored either on the local device or a network server, the system comprising:

means for connecting the local device to the network server;

means for downloading a mobile interface from the network server to the local device;

means for displaying the mobile interface on the local device;

means for inputting a request for the user specific resource or information through the mobile interface displayed on the local device;

means for retrieving the requested user specific resource or information from either the local device or the network server; and

means for displaying the requested user specific resource or information on the local device.

\* \* \* \* \*



US005901287A

**United States Patent** [19]  
**Bull et al.**

[11] **Patent Number:** **5,901,287**  
 [45] **Date of Patent:** **May 4, 1999**

[54] **INFORMATION AGGREGATION AND SYNTHESIZATION SYSTEM**

[75] **Inventors:** **David Stanley Bull, Irving; Robert Neal Carr, Jr., Watauga; Joseph Robert Offutt, Jr., Grapevine, all of Tex.**

[73] **Assignee:** **The Sabre Group Inc., Fort Worth, Tex.**

[\*] **Notice:** This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

[21] **Appl. No.:** **08/685,805**

[22] **Filed:** **Jul. 24, 1996**

**Related U.S. Application Data**

[XX]

[60] **Provisional application No. 60/015,384, Apr. 1, 1996.**

[51] **Int. Cl.<sup>6</sup>** ..... **H04L 12/66**

[52] **U.S. Cl.** ..... **395/200.48; 395/200.57**

[58] **Field of Search** ..... **395/200.02, 200.08, 395/200.09, 602, 610, 793, 200.48, 200.49, 200.54, 200.47, 200.57, 200.59; 707/531, 10, 2; 705/10, 14, 26; 379/88**

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**Primary Examiner—Zarni Maung**

**Assistant Examiner—Patrice L. Winder**

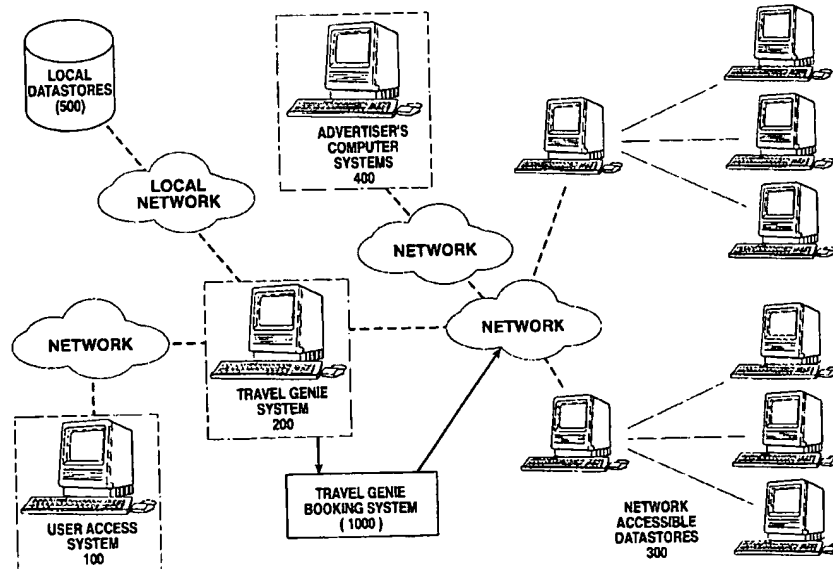
**Attorney, Agent, or Firm—Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P.**

[57]

**ABSTRACT**

An information aggregation and synthesization system and process. The present invention provides aggregation and packaging of structured or unstructured information from disparate sources such as those available on a network such as the Internet. A network compatible/addressable interface device is operated by a user. The network interface device communicates with local datastores or network accessible datastores via an addressing scheme such as Uniform Resource Locator addresses (URLs) utilized by the Internet. Data passing between the network interface device and the datastores is accessed, polled, and retrieved through an intermediary gateway system. Such aggregated information is then synthesized, customized, personalized and localized to meet the information resource requests specified by the user via the network interface device.

**5 Claims, 7 Drawing Sheets**



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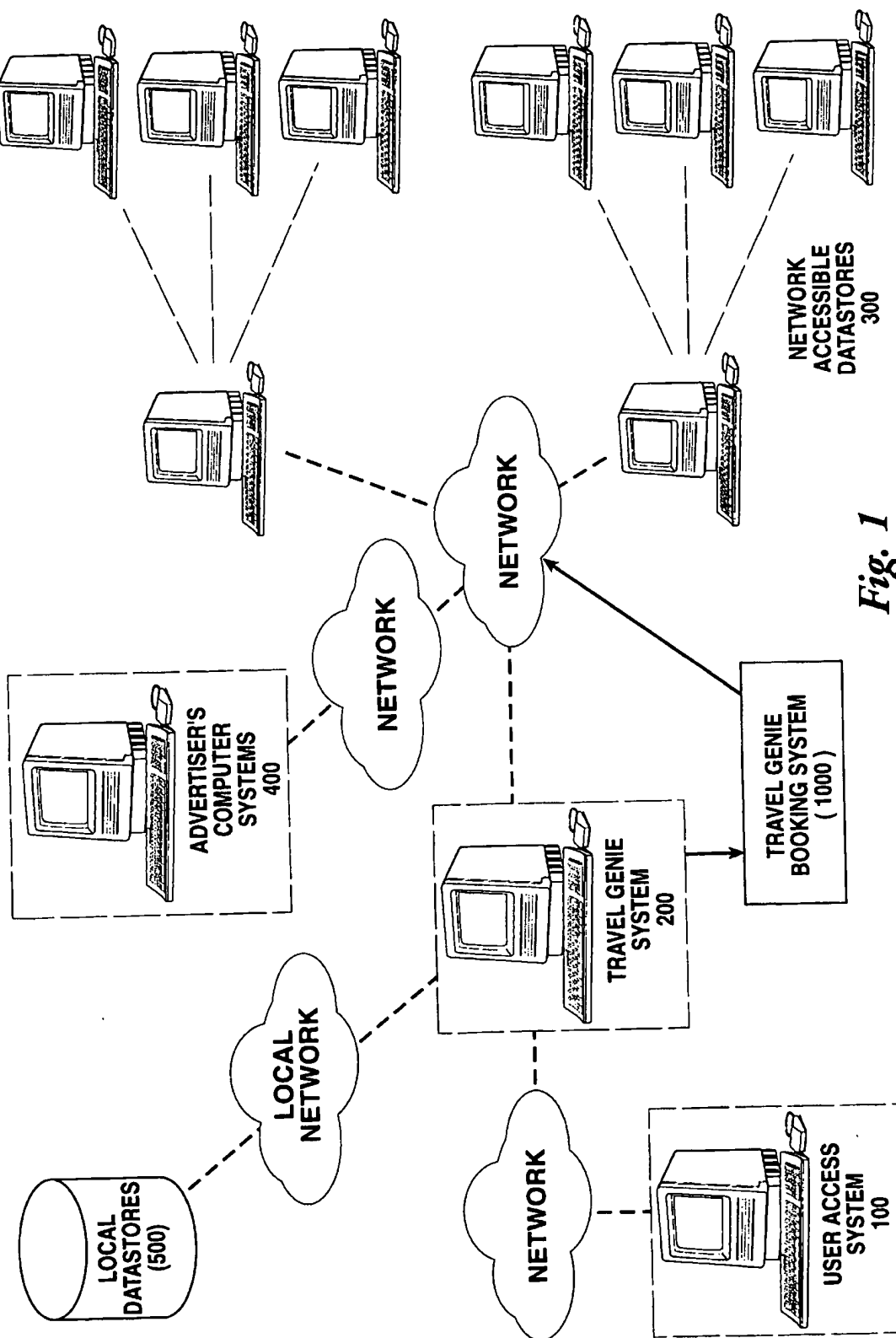
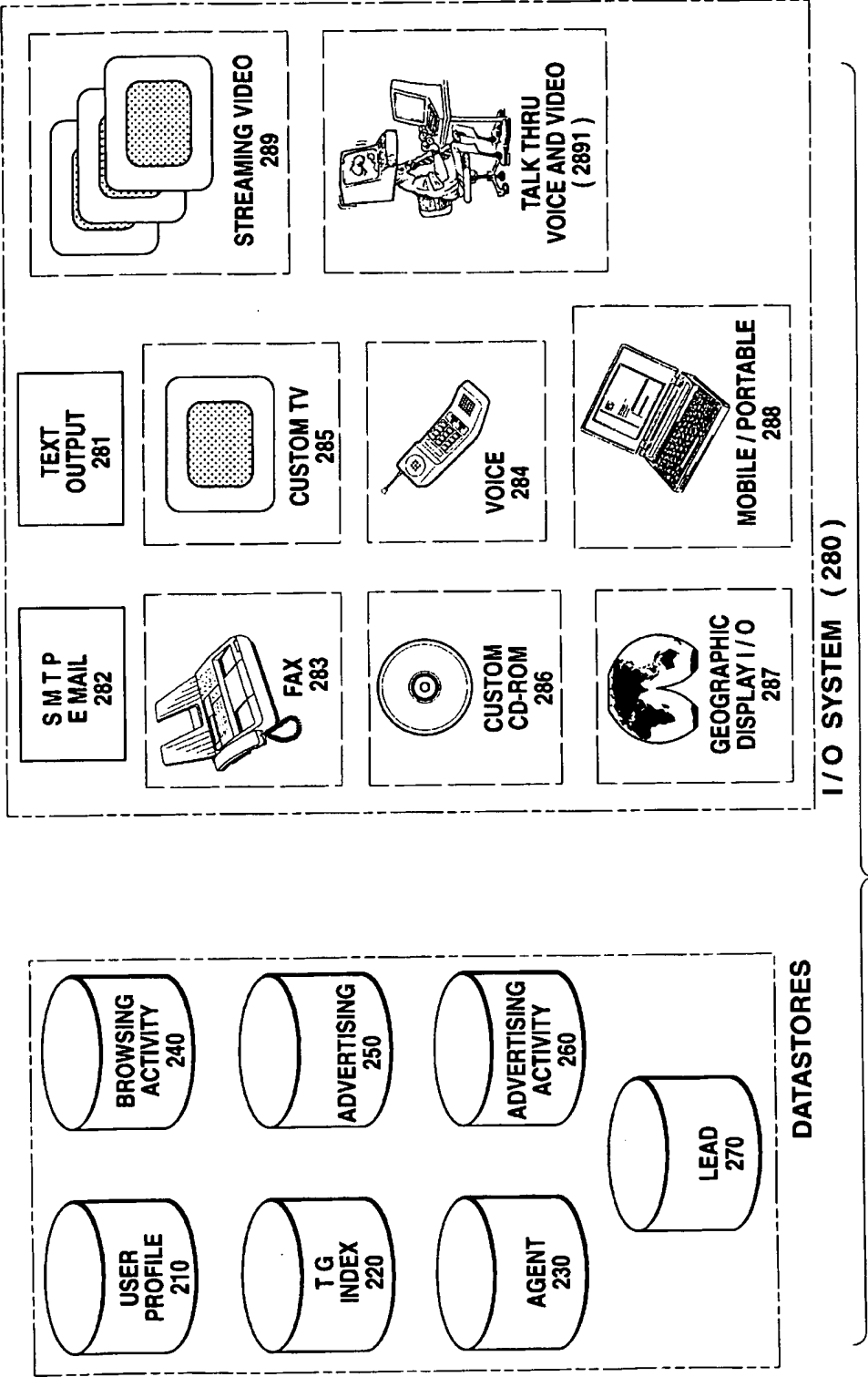


Fig. 1



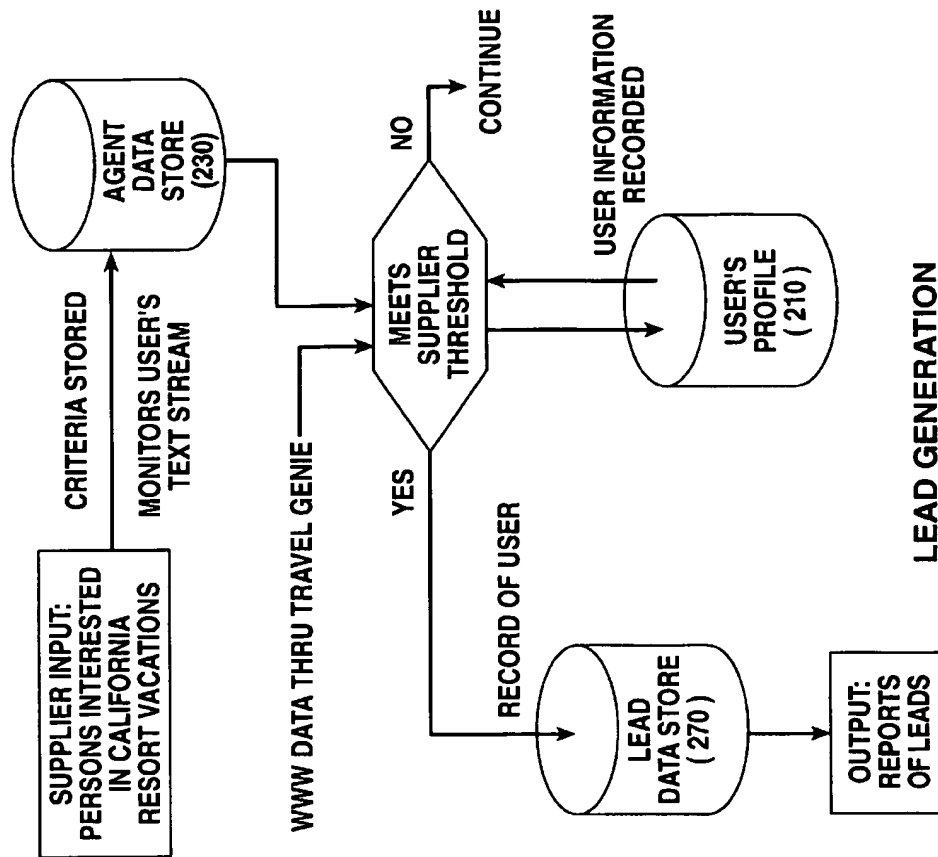
**DIALOG MANAGEMENT ( 201 )**

2011	NATURAL LANGUAGE QUERY
2012	FOREIGN LANGUAGE TRANSLATION
2013	CUSTOM USER INTERFACE
2014	SITUATIONAL AND LOCATIONAL CUSTOMIZATION
2015	INTEGRATED VIRTUAL REALITY
2016	INTERACTIVE TV

**AGENT DATA STORE ( 230 )**

231	PREESTABLISHED SOFTWARE TEXT SEARCH AGENTS
232	PERSONAL SEARCH TEXT AGENTS
233	AD / COUPON INSERTION AGENTS
234	UNMET NEEDS AGENTS
235	LEAD GENERATION AGENTS

*Fig. 3*



**LEAD GENERATION**

*Fig. 8*

**OPERATIONS SYSTEM ( 290 )**

291 USER GREETING SYSTEM	
292 TG SESSION MANAGEMENT	2921 SESSION PROFILE UPDATE
	2931 SEARCH REDUCTION SYSTEM
	2932 PICTURE SEARCH SYSTEM
	2933 COLLABORATIVE DESTINATION ASSESSMENT
	2934 SMART INDEXES
	2935 SMART SEARCH
293 SEARCH REDUCTION SYSTEM	
294 USER INTERRUPT SYSTEM	
295 R / T SESSION ANALYSIS SYSTEM	
296 AD / COUPON INSERTION SYSTEM	2961 SMART ADS
297 PERSISTANT AGENT ENTRY	
298 DATA SUPPORT SYSTEMS	2981 DATA INDEXING SERVICE
	2982 DATA MONITORING SERVICE
299 UNMET NEEDS ANALYSIS SYSTEM	2991 REAL TIME MARKETPLACE

*Fig. 4*



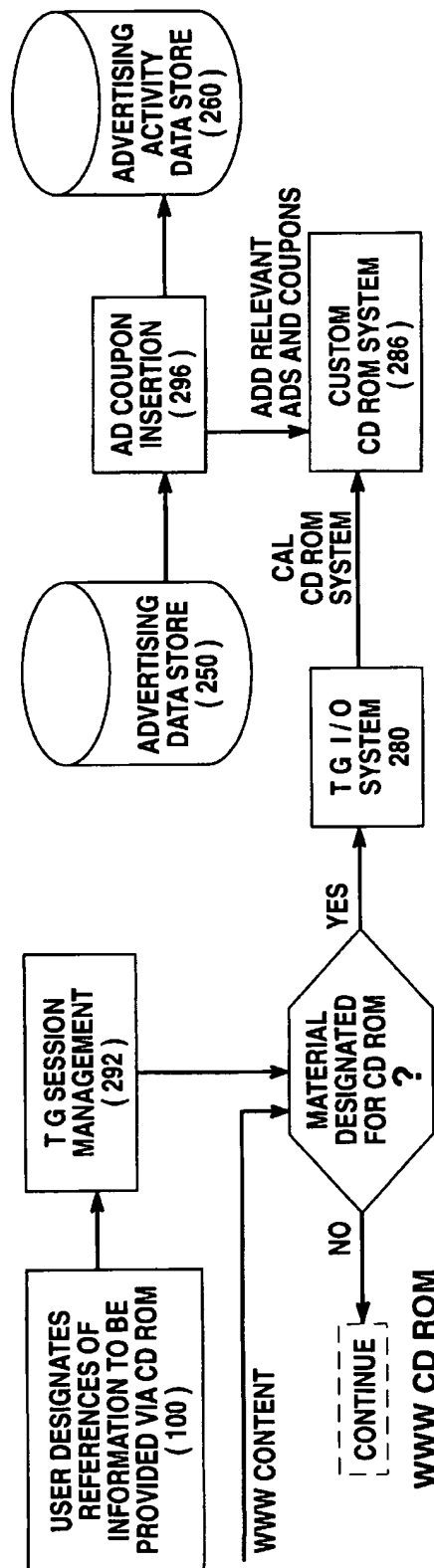


Fig. 5

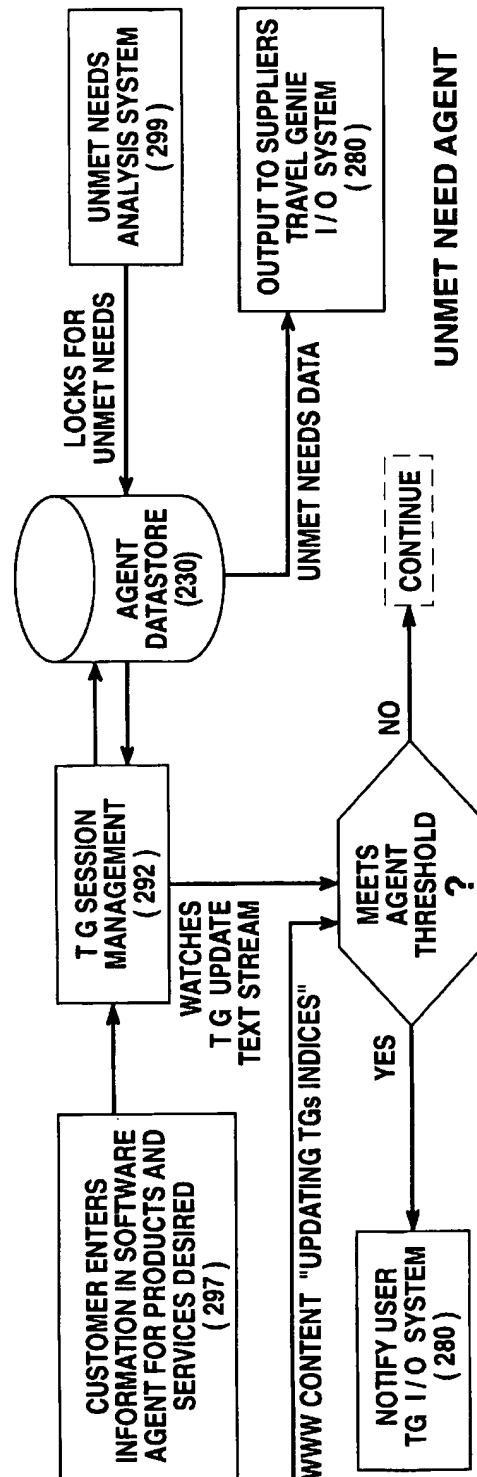
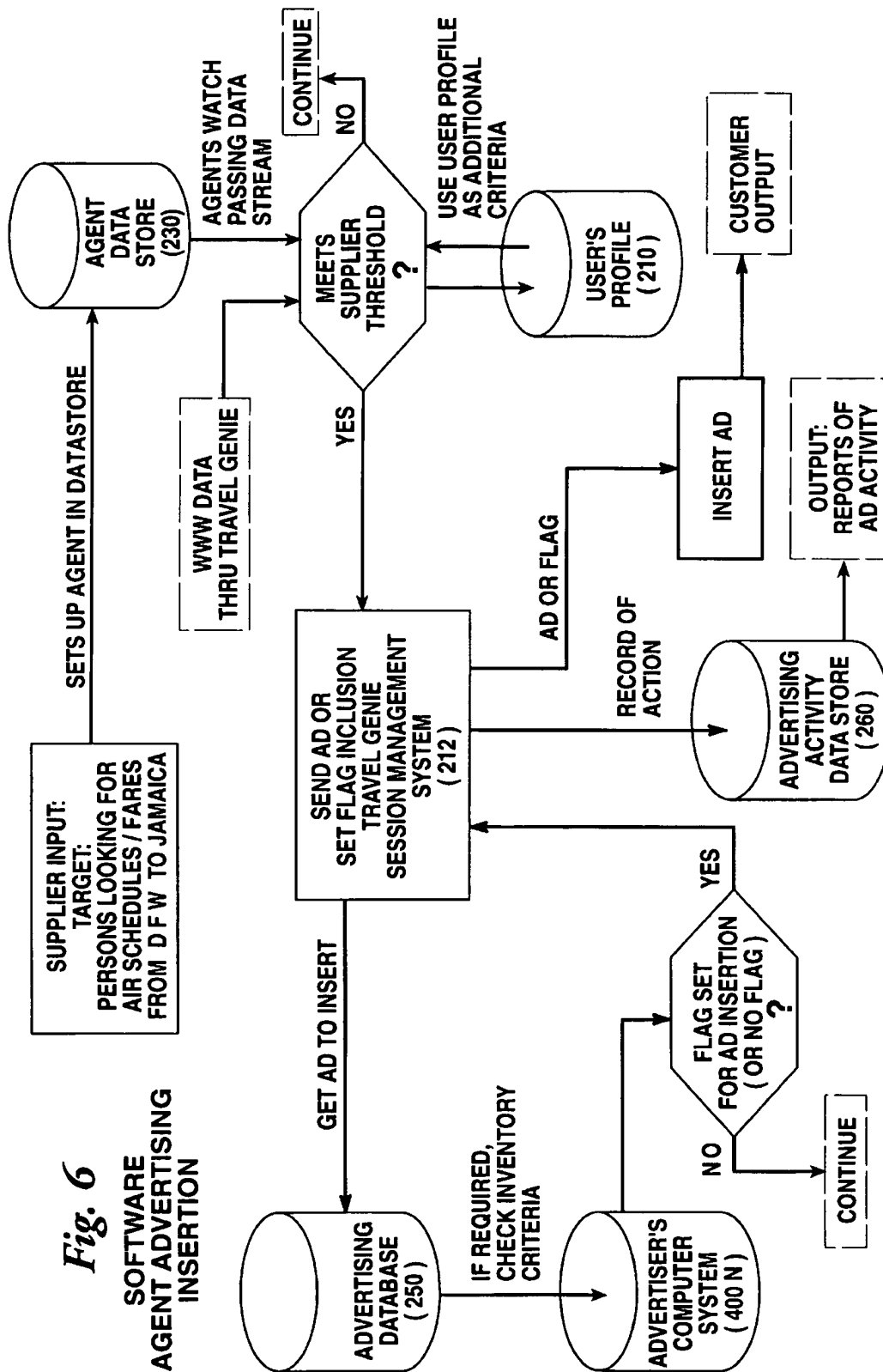
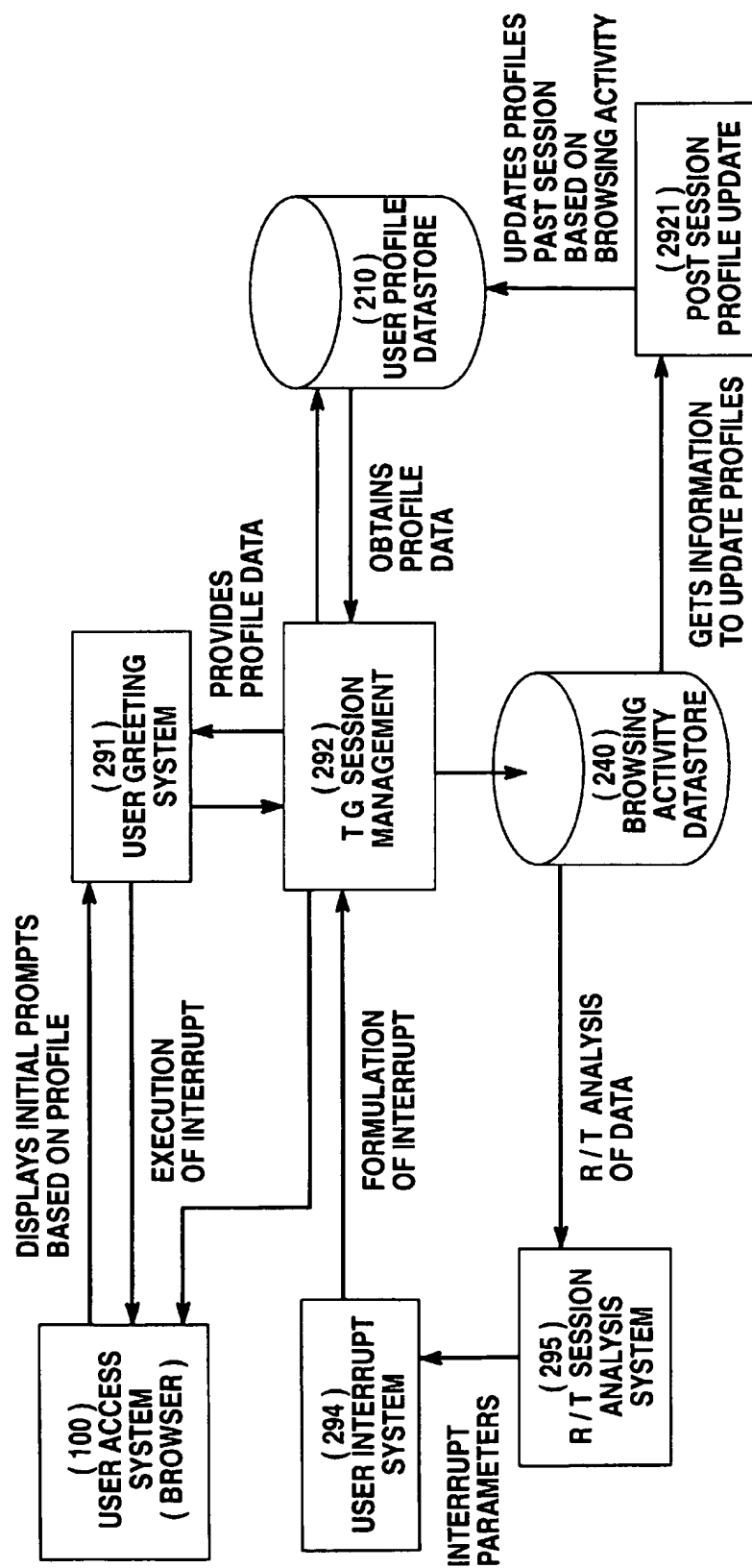


Fig. 9

UNMET NEED AGENT





AUTOMATED PROFILE GENERATION

*Fig. 7*

# INFORMATION AGGREGATION AND SYNTHESIZATION SYSTEM

## CROSS REFERENCE TO RELATED APPLICATION

This application is based on Provisional Application No. 60/015,384 entitled INFORMATION AGGREGATION AND SYNTHESIZATION SYSTEM, filed Apr. 1, 1996.

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention is directed to an information aggregation and synthesization system which connects with local and network accessible datastores through an intermediary gateway system.

### 2. Prior Art

Widespread use of personal computers, modems (modulator/demodulator devices that enable data to be transmitted) and data connections has allowed the growth of computer networks. The Internet serves as an example of a type of computer network, and indeed, is a large network of networks, all inter-connected, wherein the processing activity takes place in real time. The Internet offers mail, file transfer, remote log in and other services. The World Wide Web (WWW) is the fastest growing part of the Internet.

On the World Wide Web (WWW), a technology called hypertext allows Internet addressable resources to be connected, or linked, to one another.

In the past, certain, limited aspects, of the present invention have been proposed, such as monitoring of computer usage.

Lockwood (U.S. Pat. No. 5,309,355) provides a computerized tool to augment sales and marketing capabilities of travel agency personnel. The system creates and displays customized sales presentations from (1) stored client profiles; (2) travel agent assessment of client profiles; and (3) computerized reservation system responses to client profiles. Selected factors are analyzed by the operating program based upon an organization hierarchy of specifications.

Lockwood differs from the present invention in:

1) Data sources—Lockwood uses content from both a videodisk (static) and computerized reservation systems (dynamic). The present invention is capable of deriving content from totally dynamic sources on the World Wide Web (including Internet and local datastores or caches simulating a WWW component).

2) Client Profiles—Lockwood proposes that these be input by a Travel Agent. In the present invention, profiles are entered by the consumer (explicit) or collected through analysis of online session activity (implicit).

3) Data Organization—Lockwood uses preindexed videodisks. The present invention indexes prequalified WWW sites, updating these as they change or as users expand their WWW searches.

4) Programation—Lockwood places the entire index of information in a PROM. This index is exercised by the sequencer which displays a sales presentation. The present invention stores indices in magnetic medium but retrieval and presentation of the indexed information is executed dynamically on premised upon user input.

Remillard (U.S. Pat. No. 5,404,393) discloses an electronic device and method for monitoring television activity and communicating the monitored activity to a facility and initiating appropriate actions. A controller initiates an auto-

mated configuration by acquiring configuration information. The controller monitors television channel selection information and assembles the monitored television information into a user profile. An option includes capturing images or text and forwarding to the user through a mail facility.

Remillard differs from the present invention in that it suggests a device to access distant information through a television set. The present invention utilizes network addressable information resource and human interface elements such as those used by the Internet, one of which may in fact be attached to a TV. Remillard's invention (or that of others) may be used as a means to acquire WWW information but does not contemplate the present invention.

Levinson (U.S. Pat. No. 5,404,505) provides information in a database which is tagged with indices to form an hierarchical structure. Software having a set of subscriber requests handling routines interacts with a data filter subsystem. The data filter subsystem receives incoming data stream and selects those packets that meet certain selection criteria. A special smart caching routing is provided for anticipating future requests by the user.

Levinson differs from the present invention:

1) Levinson proposes a satellite based information retrieval system. This is based on fixed data sources (Compuserve, Prodigy) being queried by a user on a telephone line with the results being returned via a television connection. The present invention uses a similar infrastructure to return requested information to the user but our process for identifying content that is relevant is software agent based and retrieval of dynamic content is from the WWW vs. fixed data sources. The present invention can use any means: for example, TV, Cable Modem, RF, ISDN, Modem, fixed line (T-2, T-3 etc.).

2) Levinson would establish user inputted profiles for "Automatic Data Retrieval". The present invention supplements user provided profile information by constructing implicit profile recognition patterns, based upon historical search activity.

3) Levinson's invention does not specify any of the six components proposed in the present invention.

Griffin et al. (U.S. Pat. No. 5,422,809) provides an information storage and retrieval system for storing, referencing and retrieving various travel information from a database. A querying device queries the user for input used to define the field for the travel destination desired. Statistical records are produced which provide relevant information relating to travel destinations using the system. Information is thus provided which can be used to evaluate the popularity of particular destinations.

Griffin et al. differs from the present invention in that it discloses a kiosk system and the processes and subprocesses for self service travel planning and reservations. While the present invention provides similar capability using other means, the six features of the present invention are not disclosed in this patent.

Senda (U.S. Pat. No. 5,459,859) discloses an information providing system using a communication network which stores attribute/schedule information from each subscriber and uses that information to match with other subscribers.

Senda differs from the present invention in that it is a software based system for meeting a system while traveling. It involves a best fit match between profiles. The present invention also provides a "best fit" but between software agents and data being viewed. Senda has both formatted selection and source data inputted for a specific purpose (to

meet someone). The present invention uses software agents to format selection data but the source data is unformatted from the WWW.

Belove et al. (U.S. Pat. No. 5,491,820) discloses a storage transmission mechanism for retrievable items and may be used on the Internet. The system may include a filter on each client or on the server between the user and the Internet.

Belove et al. differs from the present invention in that it is a client server object caching system. Except for the pruning mechanism that limits the information cached at the client side, there is no resemblance to the present invention.

Accordingly, it is a principal object and purpose of the present invention to provide an information aggregation and synthesization process and system connecting a network operable device and a plurality of local or network accessible datastores wherein data passing there between is accessed, polled and retrieved through an intermediary gateway system.

### SUMMARY OF THE INVENTION

The present invention includes at least six different aspects or functional components which are related, all involving use of a computer accessible data network such as the Internet. While the individual aspects may be utilized together, they may also be used separately.

The user initiates access to the system through a network addressable interface device (such as a personal computer, Internet Appliance, an interactive television or even a personal digital assistant or smart telephone). The user is then connected to the information aggregation and synthesization system via a network service provider (most likely through the Internet or some variation). The user logs on to the system either by name, address, etc. or with some pseudonym (or some combination). This allows the user's activity to be tracked and establishes a log of the user's activity during the current online experience (session). The user is also asked for explicit profile information concerning preferences. These preferences will be used to narrow the information retrieval and may be collected when the user first logs in or incrementally as the user asks for specific information. This profile information will be kept and updated as the individual user's preferences change.

Once the user is logged in, the information aggregation and synthesization system will facilitate the user's access to local information or information distributed on a network (this network could be a local area network or a wide area network such as the Internet). All user access to information is through the system.

This information is topically oriented (Germany travel, the Olympics, Spring Break or even new cars), composed of files and file references using the Hypertext Markup Language ("HTML") or similar tagged reference format that may be prescreened for relevance and appropriateness. Selected text can be "expanded" at any time to provide other information. These words are, thus, linked to other documents. This information is indexed in this fashion in advance of the user's logging in.

A gateway is provided into the WWW for shopping while retaining the user passing through the information aggregation and synthesization system. A gateway is provided to poll, access and retrieve information from various locations. A filtering process is provided and the resulting information is returned to the requested party.

The user is presented with a variety of search, display and output options. The search options include: 1) Search using key words or combinations; 2) Use of complex software text search agents that have been predefined by the information aggregation and synthesization system site operators. These

agents take advantage of the expansive subject matter expertise in understanding which search parameters will best serve the user's search needs; 3) Use of search patterns and agents from this user's previous sessions, perhaps expanded by available specials and promotions; 4) Natural Language Query; and 5) Some combination of 1), 2), 3) and 4).

The user selects information to be viewed from the results of the search. This information is retrieved from its source and presented to the user in the manner and at the time requested. The available display options include but are not limited to: display on the user's network capable device, personal TV channel, customized Internet page, custom CD-ROM, electronic mail, mobile devices (Personal Digital Assistants, telephones and pagers) and facsimile. Information retrieval and display can be text, still pictures, videos, Interactive multimedia, audio and geographic.

Along with displays, including those for data entry, searches, search results, information retrieval, the user will be presented with advertisements and/or coupons based on criteria entered by advertisers. This criteria may take the form of simple logic, linking an ad/coupon with a display or be derived from complex software text search agents that analyze one or more of the following: The user's looking pattern, the user's psychographic profile, the user's personal profile, the availability of the advertiser's/couponer's goods or services at the instant in time that the criteria is being exercised. The placement of the ad/coupon will be logged along with user profile information and provided to the advertiser/couponer in some form of report.

During a user session or when a user completes a session, the user's looking activity is analyzed for patterns, preferences and trends and the profile annotated or updated so that when they next use the information aggregation and synthesization system, the nominated searches will be customized to their individual desires.

The six aspects of the information aggregation and synthesization system are:

#### I. URL Munging

The World Wide Web ("WWW") is characterized by computer (user) connection through an Internet Service Provider to any WWW address or site. Hence, use of the WWW is like placing individual telephone calls to many merchants, trying to compare products and services. URL Munging is the process that allows the goods and services of many merchants to be displayed through a single virtual shopping center.

This involves encapsulating and indexing the content of various merchants as well as modifying parts of the internal structure, repurposing and redirecting it to be integrated into the Travel Genie Infrastructure. This allows content from and access to multiple merchants to be aggregated, synthesized and accessed at a single WWW site.

#### II. WWW CD-Rom

World Wide Web ("WWW") access from homes is often constrained by the lack of sufficient data communications bandwidth within a typical residential infrastructure (WWW information may be accessed through the Internet WWW, a local Internet WWW, or a local datastore or cache simulating a WWW component).

The Internet user will select World Wide Web (WWW) content for retrieval using a search engine to return selected WWW references. The user will then select certain of these references to be included in a custom CD which will be burned or recorded onto a CD and then sent by express delivery to the user.

#### III. Software Agent Advertising Insertion.

Currently, advertisements in WWW pages are tightly tied to each page, are inserted based on keywords or on a psychographic profile of the user.

Certain criteria will be entered which delineates a pattern that is requested to be monitored. When this pattern is seen

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(or is in close match) in the user's WWW activity, the insertion mechanism is activated. If a certain web page is requested, the present invention will display a particular advertisement. The ad will be inserted based on the content of the existing web page being read. An analysis of the text stream of the user's interactive session will be performed on-line. For instance, if the user accesses web pages for Holiday Inns on the West Coast, the insertion mechanism could be established to automatically insert ads for Hilton Inns on the West Coast.

#### IV. Automated Profile Generation.

Presently, user's profiles are collected based on explicit entry by the user, and extraction from demographic data collected from a variety of sources.

In the present invention, the searching patterns of the user on the Internet are monitored. A set of software text agent profiles is developed and may be integrated with explicitly collected profile information. The automated profile generation will have both explicit profile information gathering and implicit profile information gathering capabilities.

As the user uses the information aggregation and synthesis system, the pattern of information being viewed is analyzed and the user presented with search ideas as well as promotions and specials from suppliers based on these patterns.

#### V. Automated Lead Generation

Currently, leads are generated by recording user's WWW site selection. (For Example, user's visiting a "Chicago" information site would be "Chicago" leads.)

In the present invention, the user WWW viewing patterns are recorded. These and optionally the user's profile are matched against software text agents entered by a supplier. When these agents match a pattern/profile, the supplier is notified. When this profile is approximately matched, the supplier is notified.

#### VI. Software Agent Unmet Needs Generation.

Currently, there is no on-line immediately accessible system to analyze unmet needs of Internet users.

In the present invention, records will be maintained from user usage of the Internet on what consumer queries are unmet by the WWW content retrieved. The invention will intuitively construct a profile from user inputted data. This will be done by recognizing unanswered queries and/or user initiated requests. From this, a profile will be developed to identify new markets. As an example, if one hundred people inquire about snorkeling off the coast of Texas, this information could be sold to a tour provider who could not only prepare a travel package but sell the leads to a company. Thus, the system will be able to gather "negative" leads.

In the course of a session, the user may desire information not yet available. This information could be in the form of a product, a service or an event. The user then can establish a persistent (stays around after the user's session is over) complex software text search agent to monitor future information additions to the System and alert the user through a variety of means (facsimile, electronic mail, text page, voice, pager) that the information that was requested is available or in some instances, provide the information directly. The set of persistent agents will also be analyzed by the information aggregation and synthesis system operators and provided to potential suppliers who would in turn develop new product offerings which would be added to the information aggregation and synthesis system sources.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagram illustrating the interface of the present information aggregation and synthesis system with a user in accordance with the present invention;

FIG. 2 is a diagram illustrating datastores utilized as a part of the present invention along with the input/output system components;

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FIGS. 3 and 4 illustrate components of the dialog management, agent datastore and operation systems elements of the present invention;

FIG. 5 illustrates a process flow diagram of the WWW CD-ROM aspect of the present invention;

FIG. 6 illustrates a process flow diagram for a software agent advertising insertion aspect of the present invention;

FIG. 7 illustrates an automated profile generation aspect of the present invention;

FIG. 8 illustrates a lead generation aspect of the present invention; and

FIG. 9 illustrates an unmet need agent aspect of the present invention.

#### DETAILED DESCRIPTION

In the embodiments described herein and accompanying figures, a travel information scenario is depicted. It will be understood that the present invention is capable of performing similarly for other venues, such as mortgages, automobile sales and any other interactive exchange of information sought by information content seekers and potentially satisfied by information content providers.

##### Initial Setup For User

Referring to the drawings in detail, FIG. 1 illustrates a diagram showing the interface of the present system 200 with a user on a user access system 100 and various data sources. FIG. 2 illustrates several of the datastore categories. The use of the present invention has at least five phases:

Initial Setup For User

Initial Setup For Advertisers and Lead Generation

Ongoing Maintenance

User Session

Post Session Activity

A theme or definition of a class of information (e.g., central California travel and tourism or new automobiles) is identified. Data sources (Local DataStores (500 . . . N) and Network Accessible DataStores (300 . . . N)) are screened for relevance, quality of information and appropriateness (or may be included de facto based on their title or description). These are indexed using a text indexing software tool 2981 and the indices stored on the system index DataStore 220. An initial set of Preestablished Software Text Agents are defined. These agents are words or combinations of words that form a word based search pattern. This initial set of agents is relevant to the searches that might be performed against the class of information that was indexed. (i.e., Agents about automobiles would be developed to search a class of indexed information about new cars). These are stored in the Preestablished Software Text Agent DataStore 231. The System 200 uses any multipurpose computer central processing units with the ability to handle multiple inputs and outputs with the necessary hard disk storage and to run World Wide Web (WWW) or other network server software.

##### Initial Setup for Advertisers and Lead Generation

Advertisers:

Advertisers, using a user access system 100 enter criteria that should met for an advertisement/coupon placement. These criteria are in the form of the complex software text search agents described above. This includes a match "threshold". When this threshold is met or exceeded, an ad/coupon will be appended to a system session. Statistical analysis known as clustering is used to evaluate the data.

The ad/coupon may be resident on the user access system 100, an advertiser's computer system (400 . . . N) or stored

in the Advertising DataStore 250. Additionally, the Advertiser may include conditional criteria for ad/coupon placement (available inventory, in stock levels, excess capacity, etc.). This criteria is referenced when the "threshold" is met and if satisfactory, the ad/coupon is appended. This criteria may be tested against data input through the user access system 100, data on the advertising datastore 250 or data on the advertiser's computer system (400 . . . N). Additionally, advertisers can input World Wide Web (WWW) referential information (hot links) to be displayed with ads/coupons or on geographic map displays. These are stored on the advertising datastore 250.

#### Lead Generation:

Lead Purchasers, using a user access system 100 enter criteria that should be met for the generation of a lead. These criteria are in the form of the complex software text search agents described above. This includes a match "threshold". When this threshold is met or exceeded, information about the current user and the information being viewed is stored in the lead datastore 270 for variable output transmission to the lead purchaser.

#### Ongoing Maintenance

##### Index Updating:

Local datastores (500 . . . N) and network accessible datastores (300 . . . N) will change randomly and will become out of synchronization with the system index datastore 220. The data monitoring system 2982 will periodically monitor local datastores (500 . . . N) and network accessible datastores (300 . . . N) and when there is a change, update the index datastore 220.

##### Data addition:

Operators will add data to the local datastores (500 . . . N) and users using a user access system 100 will nominate data from the network accessible datastores (300 . . . N) to be added to the index datastore 220. Operators will update the indices using the data indexing service 2981 if the data passes the screening outlined in the initial setup for users above.

#### User Session

##### Login and Profiles

##### Browsing

##### Data Retrieval

##### User Interrupt

##### Ad/Coupon Insertion

##### Persistent Agents

##### Login and Profiles:

Users using a user access system 100 access the information aggregation and synthesization system 200 through the Internet or other public or private network. The user either logs in by name or by pseudonym or from data previously stored in the user access system 100. New users create an account on the user profile datastore 210. Previous users are identified to an existing account. The user is presented with a variety of options to create or update profile information in the user profile datastore 210. This involves a single data entry option or many mini-options based on the browsing activity.

##### Browsing:

The user is also presented with browsing options based on: activity from a previous session in the browsing activity datastore 240; predeveloped software text agents and personalized software text agents (developed in the Post Session Activity) stored in the Personal Search Text Agent DataStore 232; or combinations of all as well as situational opportunities developed by the user greeting subsystem 291. The user selects the search options to be used (or simply enters search criteria directly). This search criteria is used to

search the index datastore 220 and a list of data sources is presented to the user for selection. The user indicates the information to be viewed. The user will also be presented with options to refine his search through the altering of search agent criteria (Search Reduction System 293).

##### Data Retrieval:

The requested data is retrieved either from local datastores (500 . . . N) or network accessible datastore (300 . . . N) and presented to the user via the session management system 292. The user may jump to data referenced in the presented data. Subject to the appropriate policies of the site operation, the session management system 292 will further retrieve and present this data to the user. The user may request that data be overlaid on a geographic display using the Geographic Display I/O System 287 so that referenced information may have geographic relevance.

##### User Interrupt:

The user interrupt system 294 will periodically notify the user of specialized software text agents that they may want to pursue. These Agents are stored in the agent datastore 230 and are derived by the real time session analysis system 295 which monitors the browsing activity datastore 240 during the user's session.

##### Ad/Coupon Insertion:

During the session, ads/coupons are inserted alongside displayed data (text, picture or index displays) from the ad datastore 250, based on ad/coupon insertion agents 233 and inserted by the session management system 292. A Record of Insertion along with appropriate user information (may be general or precise to the name of the user) is stored in the advertising activity datastore 260.

##### Persistent Agents:

At any time, the user may establish a persistent software Text Agent (using the persistent agent entry system 297, stored in the unmet needs agent datastore 234) with criteria, if met sometime in the future, will cause the user to be notified through the I/O System 280. These can be explicit or implicit query parameters.

#### Post Session Activity

Periodically, either due to a preset time interrupt, or user or advertiser event driven activity, the following can occur:

##### Unmet Needs Analysis

##### Advertising Report

##### Profile Updating

##### Lead Report

##### Targeted Output

##### Output Activity

##### Unmet Needs Analysis:

Users using the user access system 100 will be able to establish persistent (stays in the system after the user quits using the system) software text agents which describe some criteria, which, if met, will cause them to be notified. These are stored in the unmet needs agent datastore 234. These unmet needs agents 234 are analyzed using the unmet needs analysis system 299 and reports are created through the I/O System 280 for suppliers who could potentially meet those needs.

##### Advertising Report:

Information about each Ad/Coupon appended to an information aggregation and synthesization system along with known information about the user is stored in the advertising activity datastore 260. This is reported out periodically to the advertisers/couponers using the I/O System 280.

##### Profile Updating:

During a session or after a user discontinues use, the data viewed (recorded in the browsing activity datastore 240) is analyzed by the session profile update 2921 and the user

profile datastore 210 is updated with keywords or personal search text agent datastore 232.

Lead Report:

Periodically, the Software Text Lead Agents stored in the lead generation agent datastore 235 are used to analyze the data viewed (recorded in the browsing activity datastore 240) and reports prepared for lead purchasers using the I/O System 280.

Targeted Output:

Users through the user input system 100 will be able to designate information to be output and the format that the I/O System 280 will use.

Output Activity (Using the I/O System 280):

All output systems will provide for the addition of specials, ads and/or coupons.

Options are:

Personalized Page 281—This will create a page accessible through the WWW where the user can access requested information.

SMTP Electronic Mail 282—This allows the delivery of user requested information using the SMTP capability of the Internet and other popular electronic mail systems.

CCITT Class 3 or Class 4 Facsimile 283—This allows user requested data to be formed as a printed page and sent via Fax to a Fax receiver of the user's choice.

Voice output direct or to a Voice Mail Box 284—This translates the user requested data to audio, connects to the user or their voice mail system and transmits the audio.

Personal TV or video feed 285—This formats the data in a form compatible with transmitted video and allows viewing on demand.

Custom CD-ROM 286—This places the requested data, indices, viewers and all necessary software on a user Unique CD-ROM for physical delivery.

Geographic Display I/O System 287—This allows the user to view content geographically, to look at the geographic proximity of merchants and services and provides a vehicle for ads and hot links.

Mobile/Portable System 288—This allows Specially formatted Genie Information to be displayed or translated for a wide variety of mobile and portable devices.

Identification of Key System Components by reference numerals:

100 User Access System

200 System comprised of:

210 User Profile DataStore

220 Travel Genie Index DataStore

230 Agent DataStore

231 Preestablished Software Text Agents

232 Personal Search Text Agents

233 Ad/Coupon Insertion Agents

234 Unmet Need Agents

235 Lead Generation Agents

240 Browsing Activity DataStore

250 Advertising DataStore

260 Advertising Activity DataStore

270 Lead DataStore

280 I/O System

281 Personalized Page Output System

282 SMTP Electronic Mail System

283 CCITT Class 3 or Class 4 Facsimile

284 Voice Output

285 Personal TV or Video Feed

286 Custom CD-ROM

287 Geographic Display I/O System

288 Mobile/Portable Device System

290 Operations System

291 User Greeting System

292 Travel Genie Session Management System

2921 Session Profile Update

293 Search Reduction System

294 User Interrupt System

295 Real Time Session Analysis System

296 Ad/Coupon Insertion System

297 Persistent Agent Entry System

298 Data Support Systems

2981 Data Indexing Service

2982 Data Monitoring System

299 Unmet Needs Analysis System

300 Network Accessible DataStores

301 . . . N

400 Advertiser's Computer Systems

401 . . . N

500 Local DataStores

501 . . . N

100 User Access System

This is a network addressable interface device, such as a conventional personal computer capable of initiating and maintaining a network connection and sending, receiving and displaying data including a digitized data visual representation device such as a monitor and auxiliary storage, such as a floppy disk drive. It may also be a TV set, smart telephone or network appliance with similar capabilities. It will maintain a connection through a modem (a modulator/demodulator device) that enables data to be transmitted and received.

200 FIG. 2 illustrates datastores utilized as a part of the invention. The information aggregation and synthesization system includes:

210 User Profile DataStore

This contains data about the user, preferences, situational preferences, accounting information, psychographic profile, personal profile and other relevant information related to the user by individual identifier.

220 System Index DataStore

This is the index of data accessible by the system. It is established initially and updated as data changes or new data sources are added. It is queried by Agents from the Agent DataStore 230 or by key words.

230 Agent DataStore

231 Preestablished Software Text Agents

These are complex software text search patterns pre-defined by the site subject matter experts using their extensive knowledge of information contained within the site's indices.

232 Personal Search Text Agents

These are complex software text search patterns that may be individual words or word sets and/or combinations of words and Preestablished Software Text Agents 231 including the results of the post session analysis 2921 that provide individually customized searching of the Index DataStore 220.

233 Ad/Coupon Insertion Agents

These are complex software text search patterns that when matched within the text being reviewed within a given session, cause an advertisement/coupon to be added into the display. These can be direct insertion or conditioned from criteria on the Advertiser's Computer Systems (400 . . . N) and/or the user's profile from the user profile datastore 210

234 Unmet Need Agents

These are complex software text search patterns created by the user to persist after the end of the user session looking for patterns and/or specific events or data that are observed within the System 200 at some future time.



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**235 Lead Generation Agents**

These are complex software text search patterns that when matched within the text being reviewed within a given session, causes an addition to the Lead DataStore 270 for output to the lead purchaser using the I/O System 280.

**240 Browsing Activity DataStore**

This is the record of the "looking" activity of each user in each session.

**250 Advertising DataStore**

This is the storehouse of ads to be presented when a match is made by the Ad/Coupon Insertion Agent 233

**260 Advertising Activity DataStore**

This is the record of ads presented by the Ad/Coupon Insertion System 296 and information about the user seeing the ads from the Browsing Activity DataStore 240 and the user profile datastore 210

**270 Lead DataStore**

When a Lead Generation Agent 235 makes a match, Data about the user from the user profile datastore 210 and the Browsing Activity DataStore 240 is stored here.

**280 I/O System**

These are the various ways that output can be channeled, for the user, the advertiser or the lead purchaser.

**281 Personalized Page Output System**

This allows output text and associated objects to be formatted for general or selective viewing through any system using Hypertext Markup Language (HTML), VRML (Virtual Reality Modeling Language) or other network compatible display based language either locally or over a network.

**282 SMTP Electronic Mail System**

This allows output text for whatever purpose to be formatted in a format compatible with the SMTP (Simple Mail Transport Protocol) and transmitted to a designated addressee.

**283 CCITT Class 3 or Class 4 Facsimile**

This allows output text and associated objects for whatever purpose to be formatted to be compatible with the CCITT Class 3 or Class 4 Fax standard and transmitted to a designated fax receiver.

**284 Voice Output**

This allows output text for whatever purpose to be formatted into voice for transmission to a human receiver or a voice mail box.

**285 Personal TV or Video Feed**

This allows output text and associated objects for whatever purpose to be formatted as a TV signal (any international standard) to be accessed and replayed using local or network capability at the request of an individual user (or a class of users).

**286 Custom CD-ROM**

This allows the user to designate certain data to be placed onto a CD-ROM along with all necessary search and viewing software as well as non user requested ads and promotions.

**287 Geographic Display I/O System**

This allows data requested by the user to be overlaid on a geographic reference system (a map).

**288 Mobile Device System**

This allows output to be formatted for a variety of devices including but not limited to: pagers, personal digital assistants, mobile computing devices and other wireless devices.

**290 Operations System****291 User Greeting System**

This is the subsystem that identifies users, customizes search screens, incrementally collects explicit profile information and formulates search agent screens and search specials which may be situational or seasonal or both.

**292 Session Management System**

This tracks and records a user's browsing activity, sets ID tokens, establishes accounts, translates anonymous users to named users and manages the user's implicit profile information.

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**2921 Session Profile Update**

Uses the Browsing Activity DataStore 240 records, to analyze and update the user's profile in the user profile datastore 210

**293 Search Reduction System**

This aids the search by suggesting changes to the complex software text search agents to refine the user's search.

**294 User Interrupt System**

Based on the Real Time Session Analysis 295 of the users looking activity (stored in 240), determines associated references, agents or other information to be offered to the user and interrupts the user's session with an interactive data screen.

**295 Time Session Analysis System**

This monitors the user's browsing activity and analyzes the apparent interests to trigger the user interrupt system 294.

**296 Ad/Coupon Insertion System**

This looks at the current display requested by the user with a Ad/Coupon Insertion Agent 233, determines which ads should be placed (or rotated) and makes the placement (or establishes the rotation).

**297 Persistent Agent Entry System**

This is the mechanism whereby the user enters the Unmet Need Agent 234. This agent monitors text and data changes and if the requested data/pattern occurs, the user is notified via the I/O System 280.

**298 Data Support Systems****2981 Data Indexing Service**

This is the facility that indexes designated DataStores (either Network Accessible DataStore (300 . . . N) or Local DataStores (500 . . . N) upon operator input or periodically and stores these indices in the Index DataStore 220.

**2982 Data Monitoring System**

This facility, periodically or on demand, checks indices stored in the Index DataStore 220 against actual data (either Network Accessible DataStore (300 . . . N) or Local DataStores (500 . . . N)) and if it has changed, queues for operator review or updates indices.

**299 Unmet Needs Analysis System**

This analyzes the persistent agents for common patterns or specific requests that can be custom tailored. The results are outputted through the I/O System 280.

**300 Network Accessible DataStores****301 . . . N**

These are an infinite number of network data sources that are included in the scope of the information aggregation and synthesis. These are represented by (300 . . . N)

**400 Advertiser's Computer Systems****401 . . . N**

These are DataStores established by advertisers to store ads/coupons to be presented or to set additional conditions for display.

**500 Local DataStores****501 . . . N**

These are similar to the 300 series but locally vs. wide area network accessible.

Each of the six aspects of the present invention will be discussed in detail.

**1. URL Munging**

The present invention becomes a gateway to network data content provided by others. The present invention directs access which is controlled through an intermediary gateway system.

The user, through a network addressable interface device such as the user access system 100, will connect with a local or network accessible datastore. The user will select a page (designated by a Uniform Resource Locator or URL) to be used. The URL will be modified or "munged" so that retrieval must go through the present invention when the user executes a retrieval request. This then permits return of

requested data to the user from the datastore, at all times passing through the present invention 200.

The URLs embedded in each page that pass through are indexed by the present invention or "munged" so that any hyper linking to another WWW site always goes through the present invention. As an example, "WWW.anywhere.com" is converted to "WWW.travelgenie.com? WWW.anywhere.com", even though the user will see a direct path to the distant site.

Accordingly, when the user clicks on a URL (or types it in a browser's search request), the user will connect to the requested site through the system 200.

#### II. WWW—CD ROMS

The user of a network addressable interface device will select World Wide Web (WWW) data content for retrieval using a search engine to return selected WWW references. The user will then select and designate certain of these references to be included in a custom CD-ROM which will be burned or recorded onto a compact disc and then sent by express delivery to the user.

The user will designate pages and other WWW data content including but not limited to HTML files, audio files, still images and other graphic files from the WWW. Through the session management system 292, selected material will be designated and retrieved. The retrieved data will be included in a custom CD-ROM produced by a service bureau and then sent by a delivery service to the user. FIG. 5 shows a process flow diagram.

Optionally, the designated data may be communicated to the user via automated telephone means, may be communicated to a user via electronic replication, or may be copied on to auxiliary computer storage such as through a floppy disk drive.

#### III. Software Agent Advertising Information

Advertising is provided which benefits the user while optimizing the advertiser's expenditure by only presenting ads or coupons (or ads and coupons in a rotation if multiple ads/coupons qualify) that are pertinent to that particular user.

Certain criteria will be entered which delineates a pattern that is requested to be monitored. When this pattern is seen (or is in close match) in the user's WWW activity, the insertion mechanism is activated. If a certain web page is requested, the present invention will display a particular advertisement. The ad will be inserted based on the content of the existing web page being read. An analysis of the text stream of the user's interactive session will be performed online. When certain text patterns are observed (or close matches are observed), an advertisement is inserted into the display.

The advertising may be static or connected to the advertiser's computer datastore which designates specific ads or coupons based on the pattern match and other conditions which may be required.

FIG. 6 illustrates a flow diagram for the software agent advertising insertion.

The software agent criteria is entered by the merchant in the agent data store 230 which delineates a pattern that needs to be monitored.

As an example, if the user accesses web pages for "Holiday Inns on the West Coast", the insertion mechanism would be established to automatically insert ads for "Hilton Inns on the West Coast".

#### IV. Automated Profile Generation

Browsing patterns of the user are analyzed and these patterns update profiles automatically.

FIG. 7 illustrates a flow diagram for the Automated Profile Generation.

The looking patterns of the user are monitored to develop a set of software text agent profiles that are integrated with explicitly collected profile information to assist the user in narrowing down information for future sessions as well as

suggesting references, merchandise or services during the current session. This is accomplished by statistical analysis of the text stream.

The searching patterns of the user on the Internet are monitored by monitoring the text stream. A set of software text agent profiles is developed and may be integrated with explicitly collected profile information. The explicit information is gathered by queries to the user. The explicit and implicit data are merged to develop software text agents that support the user's future shopping sessions.

#### V. Automated Lead Generation

It is known that suppliers will pay for information gathered about user's specific interests. When tied to a specific user, these become "leads" that a supplier can use for off-line follow up. The automated lead generation aspect will analyze a user's profile and session looking activity against a profile established by a supplier. When this profile is approximately matched, the supplier is notified so it can contact the user to offer goods or services. Statistical analysis using complex software text agents is used to determine the match.

FIG. 8 illustrates a flow diagram of the lead generation.

In the present invention, the user's WWW viewing patterns are monitored. These and optionally the user's profile 210 are matched against software text agents entered by a supplier in an agent datastore 230. When these agents match a pattern or profile, the supplier is notified. Additionally, when this profile is approximately matched, the supplier is notified. Lead purchasers, using a user access system 100, will enter criteria that should be met for the generation of a lead. These criteria are in the form of complex software text search agents. When this threshold is met or exceeded, information is stored in the lead datastore 270 for variable output transmission to a lead purchaser.

#### VI. Software Agent Unmet Needs Generation

In the present invention, records will be maintained from user usage of the Internet and other networks on what consumer queries are unmet by the WWW content retrieved.

FIG. 9 illustrates a flow diagram.

If the user does not find what they are looking for, a "watcher" agent may be set up to advise them if the object of their search occurs at some future time. An example would be a tour, a price or some other information. Through the session management system 292 a threshold will be established on the user need.

The invention will intuitively construct a profile from user inputted data. This will be done by recognizing unmet or unanswered queries and/or user initiated requests. From this, a profile will be developed to identify new markets. The system will thus be able to gather "negative" leads. This information may be extracted and sold to suppliers who will build new products and services and then use the system as a mechanism to notify the potential customer.

Whereas, the present invention has been described in relation to the drawings attached hereto, it should be understood that other and further modifications, apart from those shown or suggested herein, may be made within the spirit and scope of this invention.

What is claimed:

1. An information aggregation and synthesization process, which process comprises:

operating a network addressable interface device by a user;

communicating between said network addressable interface device and a plurality of local or network accessible datastores through network specific addressing means, said network specific addressing means including Uniform Resource Locators (URLs);

accessing, retrieving and processing data in said datastores passing from said datastores to said network

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addressable interface device through an intermediary gateway system, said intermediary gateway system capable of being dynamically reconfigured by modifying an address of said datastores to direct data through said intermediary gateway system; 5

retrieving and synthesizing said data retrieved from each said datastore while passing through said intermediary gateway system to derive patterns, preferences and trends; and

modifying each said Uniform Resource Locator (URL) so that said data retrieval is always through said intermediary gateway system. 10

2. An information aggregation and synthesization process, which process comprises:

operating a network addressable interface device by a user; 15

communicating between said network addressable interface device and a plurality of local datastores or network accessible datastores through network specific addressing means, said network specific addressing means including Uniform Resource Locators (URLs); 20

designating data to be retrieved from said local and network datastores selected by said user;

accessing, retrieving and processing said data passing from said datastores to said network addressable interface device through an intermediary gateway system, said intermediary gateway system capable of being dynamically reconfigured by modifying an address of said datastores to direct data through said intermediary gateway system; 25 30

indexing and copying said designated data from said intermediary gateway system onto a compact disc at said intermediary gateway system; and

modifying each said Uniform Resource Locator (URL) so that said data retrieval is always through said intermediary gateway system. 35

3. An information aggregation and synthesization process, which process comprises: 40

operating a network addressable interface device by a user;

communicating between said network addressable interface device and a plurality of local datastores or network accessible datastores through network specific addressing means, said network specific addressing means including Uniform Resource Locators (URLs); 45

designating data to be retrieved from said local and network datastores selected by said user;

accessing, retrieving and processing said data passing from said datastores to said network addressable interface device through an intermediary gateway system, said intermediary gateway system capable of being dynamically reconfigured by modifying an address of said datastores to direct data through said intermediary gateway system; 50 55

translating said designated data into voice formatted data;

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communicating said translated data from said intermediary gateway system to a user via voice formatted automated telephonic means; and

modifying each said Uniform Resource Locator (URL) so that said data retrieval is always through said intermediary gateway system.

4. An information aggregation and synthesization process, which process comprises:

operating a network addressable interface device by a user;

communicating between said network addressable interface device and a plurality of local datastores or network accessible datastores through network specific addressing means, said network specific addressing means including Uniform Resource Locators (URLs);

designating data to be retrieved from said local and network datastores selected by said user;

accessing, retrieving and processing said data passing from said datastores to said network addressable interface device through an intermediary gateway system, said intermediary gateway system capable of being dynamically reconfigured by modifying an address of said datastores to direct data through said intermediary gateway system;

communicating said designated data from said intermediary gateway system to a user via electronic replication; and

modifying each said Uniform Resource Locator (URL) so that said data retrieval is always through said intermediary gateway system.

5. An information aggregation and synthesization process, which process comprises:

operating a network addressable interface device by a user;

communicating between said network addressable interface device and a plurality of local datastores or network accessible datastores through network specific addressing means, said network specific addressing means including Uniform Resource Locators (URLs);

designating data to be retrieved from said local and network datastores selected by said user;

accessing, retrieving and processing said data passing from said datastores to said network addressable interface device through an intermediary gateway system, said intermediary gateway system capable of being dynamically reconfigured by modifying an address of said datastores to direct data through said intermediary gateway system;

copying said designated data from said intermediary gateway system on an auxiliary storage means; and

modifying each said Uniform Resource Locator (URL) so that said data retrieval is always through said intermediary gateway system.

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